

Fenestra



LIBERTY MUTUAL INSURANCE COMPANY, Boston, Massachusetts
Chester Lindsay Churchill, Architect

B L U E B O O K

O F

S T E E L W I N D O W S A N D D O O R S

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THE COMPANY

ESTABLISHED in 1904, Detroit Steel Products Company is America's oldest and largest steel window manufacturer. The trade name *Fenestra*, is the Latin word for *window*. Many of the Fenestra windows installed in the early days are reported to be in excellent condition today. Millions of Fenestra windows are in continuous service throughout the nation, and in many foreign countries. Primarily, Fenestra is an organization of steel window and steel door specialists.

THE PRODUCTS

FENESTRA has developed and pioneered many notable improvements in the window and door industries. One of the latest is the Bonderizing process for the protection of steel against rust, introduced in 1937. There is a Fenestra steel window and door for almost every building need—for residential, com-

mercial, industrial, educational, hospital and institu-
tional, public, religious, social and recreational
buildings, etc.

THE SERVICE

TO render efficient service throughout the country, the Fenestra distribution system includes engineering and sales offices in 200 principal cities (see back cover of this catalog), factory warehouses located in trading centers, and an organization of thousands of dealers.

For the particular information of architects, Fenestra publishes many catalogs—supplied on request—which provide the most complete details available in the steel window and steel door industries.

Below—one of two Detroit Steel Products Company factories in Detroit, Michigan. Other plants are located in Monroe, Michigan, and in Oakland, California.



Fenestra

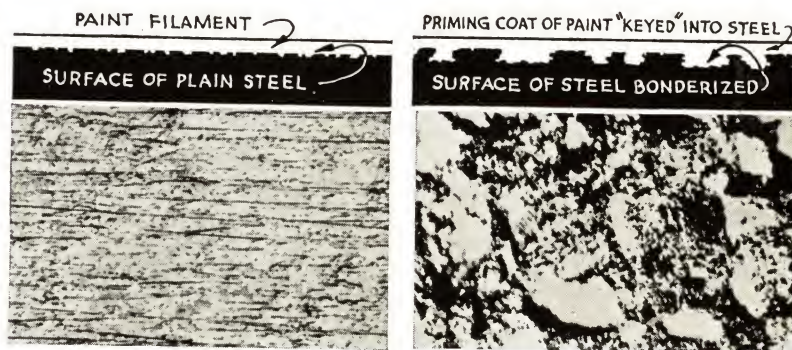
STEEL WINDOWS and DOORS

BY AMERICA'S OLDEST AND LARGEST STEEL WINDOW MANUFACTURER

FENESTRA INTRODUCES BONDERIZING FOR PROTECTION AGAINST RUST

FENESTRA introduced the Bonderizing process to the steel window industry in 1937, with a new plant costing \$200,000. The Fenestra Bonderized Finish is now standard on all Fenwrought Casements, Basement and Utility Windows made in Detroit, and is available on other types of windows (and doors) at slight extra cost when specified.

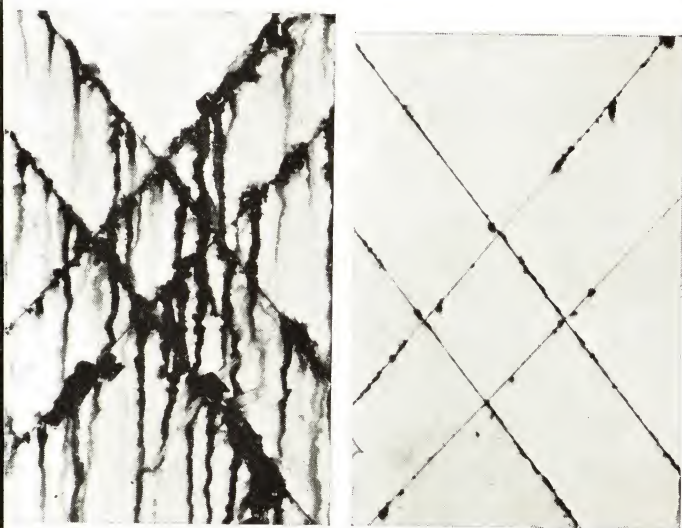
In this process the smooth metallic surface is etched by chemicals, and becomes a non-metallic, crystalline structure, "toothed" with countless microscopic peaks and pits. When the Fenestra Primer is applied to this new surface, the paint flows into the crevices between the crystals and is thus "keyed" to the steel.



Plain Steel Surface (enlarged). Note it is "slick," offering poor foothold for paint.

Bonderized Surface (enlarged). Note peaks and pits which provide secure anchorage for paint.

Fenestra's new Bonderized Finish is destined to effect important savings in maintenance costs: It protects against rust, and in case of abrasion, retards the creepage of rust beneath paint film. Fenestra's special, baked-on, Rust-inhibitive Primer, anchored to the steel, lasts 3 to 5 times longer than ordinary primers. It affords a durable base coat for all finish coats applied in the field, protecting against flaking, peeling, chalking and abrasion.



Photographs at left show two steel panels. The one on the extreme left is plain steel, acid cleaned and then painted. The other has Fenestra's standard Bonderized Finish. Both were cross-scratched deep, to expose the bare metal, following which both were subjected simultaneously to salt spray (20% solution) for more than 700 hours. Note that the rust in the panel with the Bonderized Finish is closely confined to the bare metal in the scratches.

DETROIT STEEL PRODUCTS COMPANY

GENERAL OFFICES: 2250 EAST GRAND BOULEVARD, DETROIT, MICHIGAN

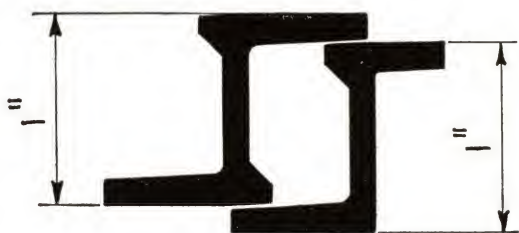
Factories: Detroit and Monroe, Michigan, and Oakland, California

Member of The Producers' Council, Affiliated with the A. I. A.

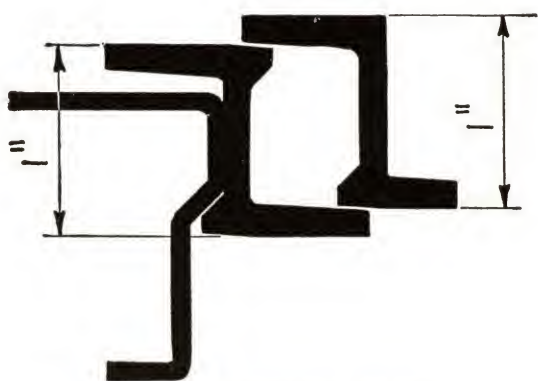
CASEMENT WINDOWS—FULL SIZE SECTIONS

Grouped below are full size, typical sections of various types of Fenestra Casements, with their bar depth dimensions and trade names, for comparison and con-

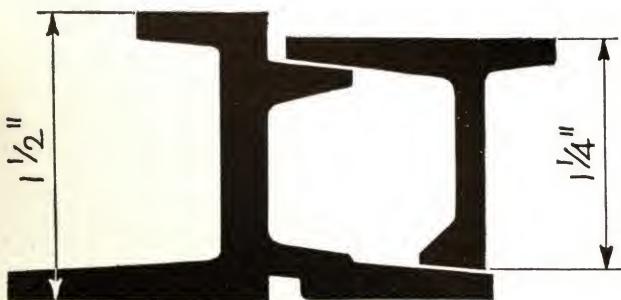
venient selection. For more complete details of each type, see following pages. (For windows for Industrial, Commercial or Institutional buildings see Index.)



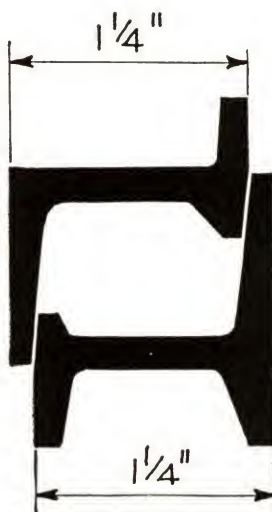
FENWROUGHT CASEMENTS



**BASEMENT AND
UTILITY WINDOWS**



**PROJECTED FENMARK
WINDOWS**



**FENCRAFT
CASEMENTS**



**DALMO-FENMARK
WINDOWS**



**FENMARK
WINDOWS**



**CUSTOM
CASEMENTS**

FENWROUGHT CASEMENTS

Fenestra Fenwrought Casements are the most popular of all Fenestra Casement designs for residential use. They are applicable to all types and designs of houses from the severely Colonial to the ultra Modern, and to all kinds of construction, including brick, brick veneer, stone, frame and stucco.

Frames are solid, rolled sections 1 in. deep from front to back. Corners of both frames and swing leaves are mitered and electrically butt-welded. Swing leaves meet the frame with a continuous, two-point, flat contact and are weathered by double baffles extending all around the opening.

All Fenwrought Casements have extension (cleaning) hinges so that the outside surface of all glass lights may be reached from inside the room for cleaning.

All Fenwrought Casements, made in Detroit, are "Rust Inhibited" by means of a special finish which includes alkali cleaning, Bonderizing, dip priming and oven baking. This process makes the useful life of the priming coat three to five times as long. Provision should be made for a second painting after erection and before glazing and for a finish coat about three weeks after glazing. (See Page 1.)

Mastic is supplied by the window manufacturer for sealing the entire perimeter of all Fenwrought Casements.

Glazing is done from the outside after installation. We recommend $\frac{1}{8}$ in. or $\frac{3}{16}$ in. plate glass set in bed and face putty and held by spring glazing clips which are supplied at no extra cost. Only steel window putty should be used.

(Units may be combined, one above another by means of transom bars, or side by side through the use of T mullions or $1\frac{1}{2}$ in pipe mullions.)

("Inside Insulating Window" available if desired.)

THREE FENWROUGHT GROUPS

To permit a wide variety in the selection of types and flexibility in design and cost, Fenwrought Casements are subdivided into three groups:

Screen Fenwrought Casements.

Standard Fenwrought Casements.

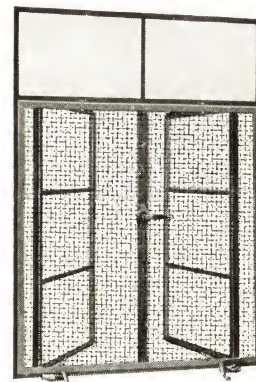
Economy Fenwrought Casements.

All of the information given above applies equally to all three types, but in certain other features, the three types differ considerably as outlined below:

SCREEN FENWROUGHT CASEMENTS

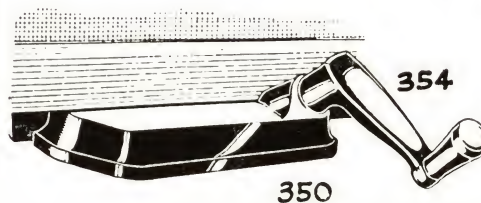


Right: Screen Type Fenwrought, Type 4426 same as at left but with vertical muntins omitted to give horizontal glass lights. ONE screen covers both swing leaves.



Left: Screen Type Fenwrought Casement, Type 4426. Double ventilated. Only ONE screen is needed to cover both swing leaves.

Hardware for Screen Type Fenwrought. At right, the Locking Handle; below, the Roto-Adjuster and Roto-Adjuster Handle.



Screen Fenwrought Types are equipped for Fenestra, Inside, Flat Screens and have hardware so designed that the swing leaves may be opened, closed and locked without touching the screens.

Handle brackets are of solid rolled steel or steel plate, solidly attached to the casement frame and carry the locking handles which are attached by concealed spring washers and lock nuts.

Extension (cleaning) hinges have bronze hinge pins and flanged bronze bushings.

Roto-Adjusters at the sill rest on and are firmly attached to solid rolled steel brackets solidly welded to the casement frame.

(For Roto-Adjuster assembly, see Section 6, General Window Specifications (page 11). Fenwrought adjusters supplied with diecast cases. (Bronze at extra cost where specified.)

Stock Warehouse types have diecast hardware with bronze lacquer finish including: Handle 1023; Roto-Adjuster 350 with adjuster handle 354; Transom Stay 1108. Solid bronze hardware furnished at extra cost, when specified, but shipment from factory is required.

We strongly recommend the use of Stock Warehouse types (see page 5). These may be supplied as shown or with muntins omitted as specified.

Screens have frames of cold rolled steel, reinforced by a continuous, triangular rib. Frames are Bonderized and painted two coats of gray enamel, the first coat baked on. (Provide for finish painting in field.) Cloth is 16-mesh, .0113 in. bronze wire. All screens are rewirable. Each screen is removable and interchangeable with any other screen of the same size and hand. A circular aperture in each screen permits it to fit snugly over and around the casement locking handle.

STANDARD FENWROUGHT CASEMENTS



Standard Fenwrought Vent Center Type with sliding wicket screen attached.

Standard Fenwrought Types are equipped for Fenestra Inside Wicket screens. These screens have horizontally sliding wickets providing access to casement locking handles. Wicket frames and guides occur directly opposite casement muntins. Screen frames attach directly to casement bars and are undisturbed in operating vents—a decided advantage over screens hinged to swing in with resulting interference with shades, curtains, etc.

Handle brackets are of solid, rolled steel solidly welded to the swing leaves. Locking handle is mounted on boss on bracket and firmly attached by a friction clevis, screw and shakeproof washer. Cleaning hinges are friction type with oil-impregnated bronze bushing washers, bronze studs and nuts. Adjustment of the nuts increases or decreases the friction. Top hung swing leaves have sherardized steel hinges with bronze pins.

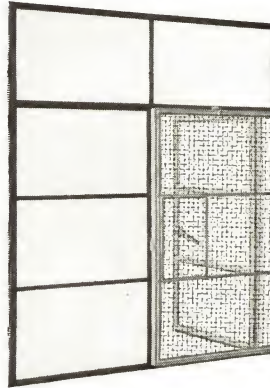
We strongly recommend the use of Stock Warehouse Types (see page 5) which are supplied as shown or with muntins omitted if so specified. Hardware for these types include diecast Locking Handle 30 with bronze lacquer finish, and Transom Stay 747 in rust-proofed iron. Any type furnished with solid bronze hardware, if specified, but shipment from factory is required.

Screens have frames of cold rolled steel with corners mitered and

butt welded, and with extending flanges to permit clearance of hardware. Frames are Bonderized and painted one coat of gray enamel, baked on. (Provide for finish painting in field.) Cloth is 16-mesh, .0113 in. bronze wire. All Screens are removable and rewirable. Rolling screens are available at extra cost if desired.

Wicket type screens are also available for top hung transom ventilators.

ECONOMY FENWROUGHT CASEMENTS

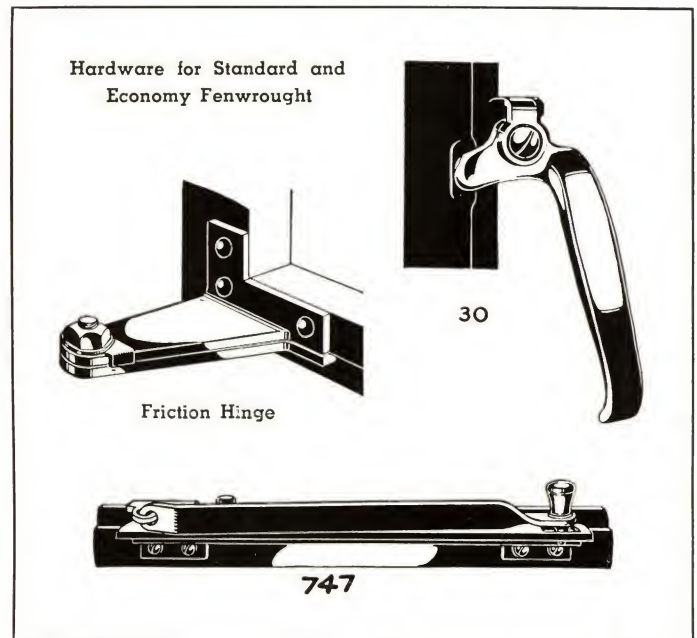


Economy Fenwrought Type with sliding wicket screen attached. Note offset vent and absence of vertical muntins. Provides same amount of light and ventilation as Standard Fenwrought Type shown at left but costs less.

Economy Fenwrought Types are exactly like Standard Fenwrought Types in material, workmanship, dimensions, construction and hardware but are supplied only in the types and sizes shown on page 6. The arrangement of swing leaves and the omission of vertical muntins often results in a considerable saving.

Economy Casements may be combined with Standard and Screen Types where desired, by the use of mullions or transom bars.

Wicket type screens are supplied for Economy Casements.



FENESTRA WOOD SURROUNDS

The installation of all Fenwrought Casements is made easier by the use of Fenestra Wood Surrounds. These are especially designed of California Red Wood and are attached to the casements in a bed of mastic by copper coated screws before shipment, if so specified. The builder saves the cost of making and attaching his own surrounds and is provided with quick, economical, efficient method of installing his windows and locating his plaster grounds.

GLASS SIZES

A	8" × 12"	*P	8 1/2" × 11 3/8"
B	8 1/2" × 12 3/8"	R	11 3/8" × 12 3/8"
C	8 1/2" × 12"	T	11 3/8" × 10 1/2"
D	8 1/2" × 12"	U	11 3/8" × 11 3/8"
E	10" × 12"	V	8" × 10"
F	11 3/8" × 11 3/8"	W	8 1/2" × 10"
G	9 7/8" × 15"	LL	8" × 9 7/8"
H	9 7/8" × 9 7/8"	SS	7 1/2" × 9 1/2"
J	11 1/2" × 16 1/2"	WV	8 1/2" × 9 1/2"
M	11 1/2" × 16 1/2"		
N	11 1/2" × 13 1/4"		
O	14 1/2" × 10 1/2"		

**LIGHTS NOT LETTERED ARE "A" SIZE.
* : CUT TO TEMPLATE WHEN USED IN
SEMI-CIRCULAR UNITS.**

TILTING UNIT TYPES

$3 \cdot 1\frac{1}{2}$
 $4 \cdot 7\frac{1}{2}$
 $41-PI-4$
 $61-PI-4-VC$
 $1-7\frac{1}{8}$
 $61-PI-4-VC$
 $21-PI-2$

TRANSOM TYPES

$2 \cdot 3 \frac{1}{4}$ $42 \cdot 14$ -TH-VC $1 \cdot 7 \frac{3}{8}$ $22 \cdot 14$ -TH
 $3 \cdot 1 \frac{1}{2}$ $42 \cdot 24$ -TH $4 \cdot 7 \frac{1}{2}$ $62 \cdot 14$ -TH-VC





FENWROUGHT TYPES

SCREENED & STANDARD

A-244

VC = VENT IN CENTER.
TH = TOP HINGED TRANSOM.
PI = PROJECTED IN (TILTIN)

TYPE SIZES GIVEN ARE ACTUAL WINDOW DIMENSIONS. ALLOW CLEARANCE FOR INSTALLATION. SEE OTHER PLATES.

 SIDE =  TOP =  PROJECTED IN
 HINGED HINGED HINGED
 ● INDICATES STOCK WAREHOUSE TYPE.

CASEMENT IS HINGED AT RIGHT, A LEFT HAND AT LEFT. NOMENCLATURE SHOULD INCLUDE THE SUFFIX "R" OR "L" TO INDICATE HAND. ~

CASEMENTS WITH SINGLE SIDE HINGED
VENTS MAY BE RIGHT OR LEFT HAND. WHEN
VIEWED FROM OUTSIDE, A RIGHT HAND

1-1/8" 1-1/8" CH-1
 2-1/4" 2-1/4" CH-2
 3-1/4" 3-1/4" CH-4
 4-7/8" 4-7/8" CH-6
 5-1/2" 5-1/2" CH-8
 6-1/2" 6-1/2" CH-10
 7-1/2" 7-1/2" CH-12
 8-1/2" 8-1/2" CH-14
 9-1/2" 9-1/2" CH-16
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 162-1/2" 162-1/

ECONOMY FENWROUGHT TYPES AND SIZES

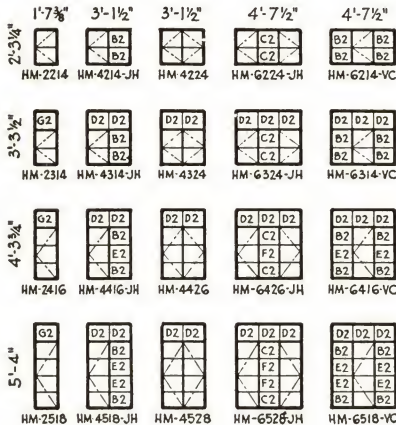


TABLE OF GLASS SIZES			
MARK	SIZE	MARK	SIZE
A2	16 5/16" x 12"	E2	17 5/16" x 12"
B2	17 5/16" x 12 3/8"	F2	17 5/8" x 12"
C2	17 5/8" x 12 3/8"	G2	17 1/2" x 11 3/4"
D2	17 5/8" x 11 3/4"		

LIGHTS NOT LETTERED ARE "A2"

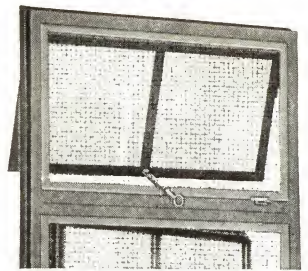
NOTE

CASEMENTS WITH SINGLE VENTS MAY BE EITHER RIGHT OR LEFT HAND, DEPENDING ON SWING OF VENT DESIRED. WHEN VIEWED FROM THE OUTSIDE, A RIGHT HAND CASEMENT HAS VENT HINGED AT RIGHT AND A LEFT HAND HAS VENT HINGED AT LEFT.

OFFSET VENTS (AS IN TYPE HM-4518-JH) MUST ALWAYS BE HINGED AT THE JAMB OF FRAME.

NOMENCLATURE SHOULD INCLUDE THE LETTERS "R" or "L" TO INDICATE HAND AS HM-4416-JH-R OR HM-6518-VC-L VC = VENT IN CENTER JH = VENT HINGED AT JAMB OF UNIT

Below: Four-light-wide "Tiltin" sill ventilator. Can be screened on the outside.



Above: Two-light Transom, screened inside, above a Screened Type Casement.

FENESTRA "TILTIN" AND TRANSM WINDOW S

Fenestra Tiltin Windows, one light high and two, four, six and eight lights wide, (4 lights wide maximum vent size), opening in at the top, are supplied for attachment to the sills of Fenwrought Casements but may be used individually if desired. When open, they act as baffles, deflecting air currents upward and toward the opposite side of the room.

Designed for bedrooms where moderate night ventilation is needed. Also adaptable to libraries, play rooms, dens, sewing rooms where the "wind guard" feature prevents sudden gusts from disarranging papers, patterns, games or materials. Can be left open even in rainy weather. Screened outside where specified. When used separately, Tiltin Windows may be set high in the wall to leave room below for beds, bookcases or cupboards. Also convenient for basement "Rumpus Rooms" etc. See types and sizes under Fenwrought, page 5.

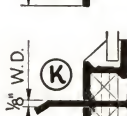
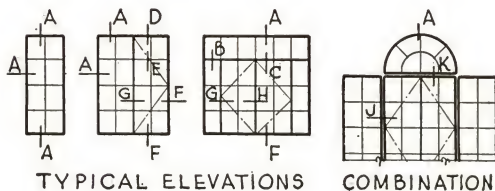
Two-light-high, top-hung, open-out transoms may be used at the head of Screened or Standard Type Fenwrought Casements. (See page 5.) Desirable for kitchens or for bedroom night ventilation. Weather-protecting even when open.

FENESTRA STEEL LOUVERS

Designed in two types only, to fit fixed light Fenwrought Casement Types 12 and 21 with muntin omitted. Made of 16-gauge, pressed steel to be set directly into the casement frame and held by glazing clips and putty, like a pane of glass. Particularly applicable to attics, gable ends, store rooms or wherever moderate ventilation without light is desirable.

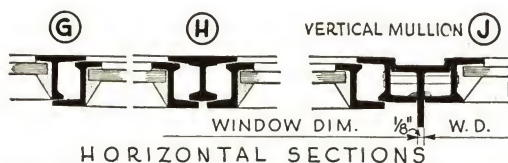


LOUVERS FOR FENWROUGHT UNITS



SYMMETRICAL COMBINATIONS OF UNITS				
STANDARD WIDTHS	UNITS WIDE	PANES WIDE	PANES WIDE PER UNIT	VERT. MULLS
1' - 7 3/8"	1	2	2	0
3' - 1 1/2"	1	4	4	0
3' - 2 7/8"	2	4	2-2	1
4' - 7 1/2"	1	6	6	0
4' - 10 3/8"	3	6	2-2-2	2
6' - 1 5/8"	1	8	8	0
6' - 3 3/8"	2	8	4-4	1
6' - 4 1/2"	3	8	2-4-2	2
6' - 5 7/8"	4	8	2-2-2-2	3
7' - 10 1/2"	3	10	2-6-2	2
7' - 10 5/8"	3	10	4-2-4	2
8' - 1 3/8"	5	10	2-2-2-2-2	4
9' - 4 3/4"	3	12	4-4-4	2

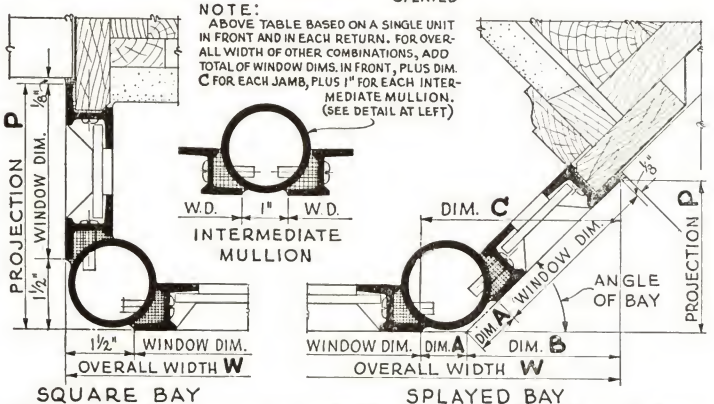
STANDARD WIDTHS IN TABLE ABOVE INCLUDE ALLOWANCE FOR VERTICAL MULLIONS.



FENWROUGHT SECTIONS & COMBINATIONS A-262

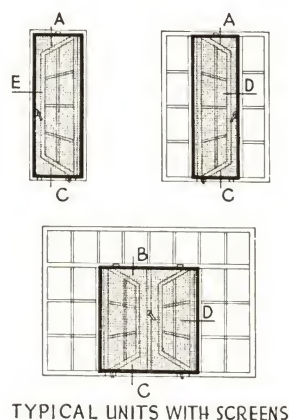
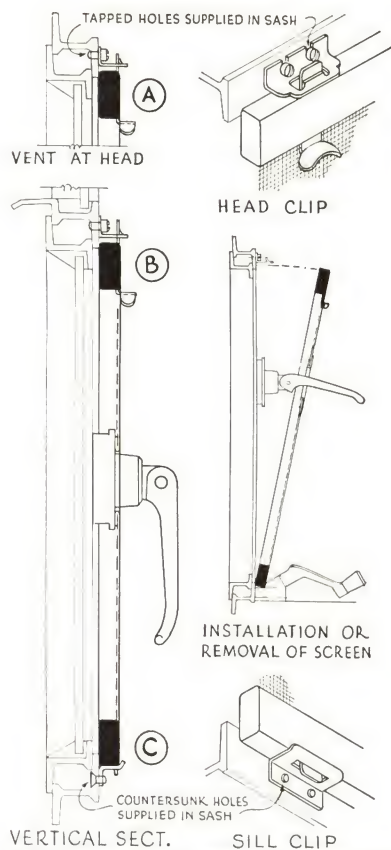
ANGLE OF BAY	PROJECTION	DIM. A	DIM. B	DIM. C	OVERALL WIDTH W		
IN RETURN	P	SEE DETAILS BELOW			LIGHTS IN FRONT SECT.		
30°	1	6 15/16"	13 1/16"	1'-0"	5'-3 1/16"	6'-9 1/8"	8'-3 1/4"
2	10 1/16"	1'-5 7/16"	1'-6 1/4"	6'-1 1/16"	7'-8"	9'-2 1/8"	
45°	1	9 7/8"	15 1/16"	10 13/16"	4'-11 1/16"	6'-5 5/8"	7'-11 1/4"
2	1'-2 5/16"	1'-2 5/16"	1'-3 3/4"	5'-7 5/16"	7'-2"	8'-8 1/8"	
60°	1	1'-0 1/4"	1 1/16"	7 1/16"	4'-5 1/16"	5'-11 1/4"	7'-5 7/8"
2	1'-5 5/8"	10 3/16"	11 1/4"	4'-11 1/16"	6'-6"	8'-0 1/8"	
90°	1	1'-2 3/8"	DIM A = DIM C = 1 1/2"	3'-4 1/16"	4'-10 1/16"	6'-4 5/8"	
2	1'-8 1/16"	10 3/16"	3'-4 1/16"	4'-10 1/16"	6'-4 5/8"		
SQUARE SPLAYED	1	2'-0 3/8"	10 3/16"	11 1/2"	5'-0 7/8"	6'-6 1/2"	8'-0 5/8"
2	2'-11 1/4"	15 1/16"	1'-3"	1'-3 1/16"	5'-9 5/8"	7'-3 3/8"	8'-9 1/2"

SPLAYED BAYS SQUARE BAY SQUARE SPLAYED

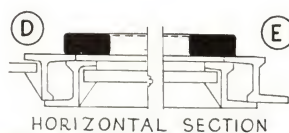


PIPE MULLIONS & TYPICAL BAYS

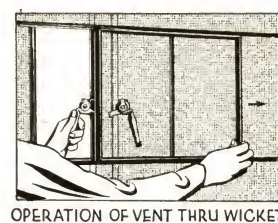
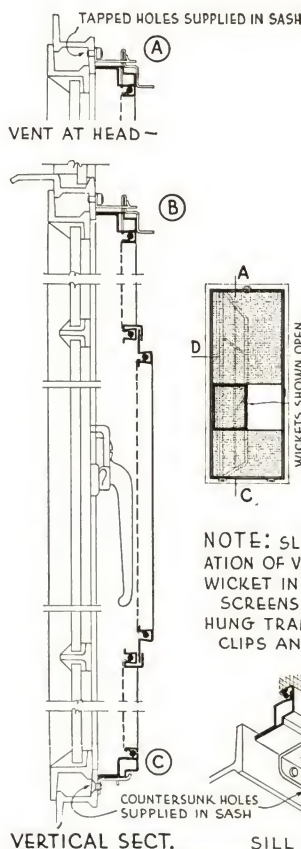
A-263



NOTE
SILL CLIPS OCCUR ONLY AT HANDLE SIDE OF SINGLE VENTS. HEAD CLIPS HOLD SCREENS WITH POSITIVE CAM ACTION AND ARE EASILY ENGAGED AND DISENGAGED. SCREENS OF THIS TYPE ARE ALSO AVAILABLE FOR TOP HUNG TRANSOM VENTS. CLIPS AND SCREWS ARE FURNISHED WITH SCREENS.



FLAT SCREENS FOR SCREEN FENWROUGHT A-264

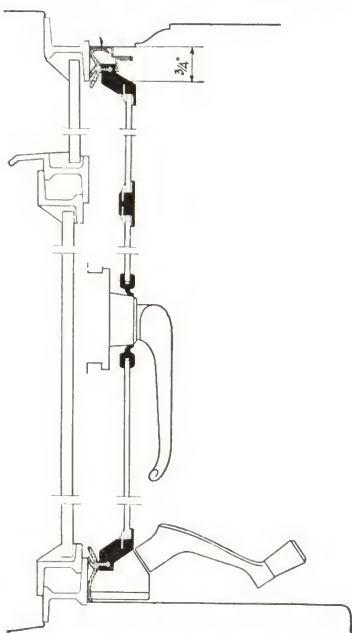


NOTE: SLIDING WICKETS PROVIDE ACCESS FOR OPERATION OF VENTS AFTER WHICH WICKETS ARE RECLOSED. WICKET IN DOUBLE SCREEN SLIDES EITHER WAY TO OPEN. SCREENS OF THIS TYPE ARE ALSO AVAILABLE FOR TOP HUNG TRANSOM VENTS. CLIPS AND SCREWS ARE FURNISHED WITH SCREENS.

WICKET SCREENS FOR FENWROUGHT (STANDARD & ECONOMY) A-125

INSIDE INSULATING WINDOWS

Designed to entirely cover Screen, Standard and Economy types of Fenwrought Casements. Applied inside (when screens are removed) forming a "Double Window" with approximately 1 in. of dead air space between glass surfaces.



Fenestra Insulating Window installed on Screen type Fenwrought Casement.

An effective, insulated, Double Window eliminating frost and condensation under all ordinary conditions (70 degrees and 40% relative humidity inside and 5 degrees above zero outside.) Heat loss through windows is reduced 60%. A definite saving in fuel consumption is effected and sometimes an actual saving in the cost of heating equipment.

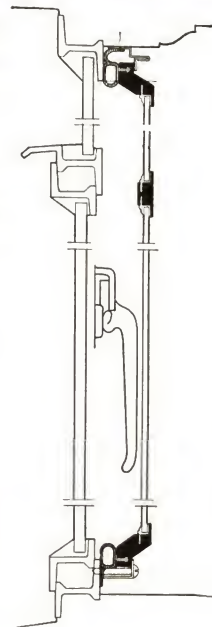
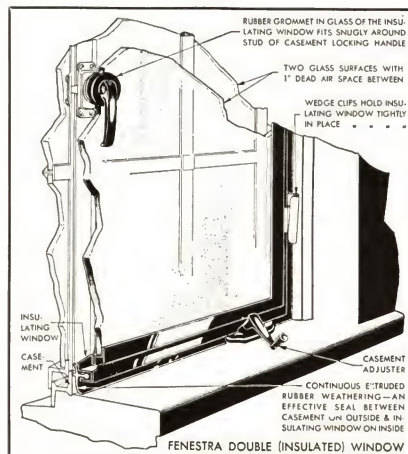
Easy to put on. Easy to take off. Preserves the attractive appearance of the window. Ventilated types available to provide restricted opening.

Frame is light weight, cold rolled, tubular steel with corners mitered, welded and reinforced. Shipped glazed with double

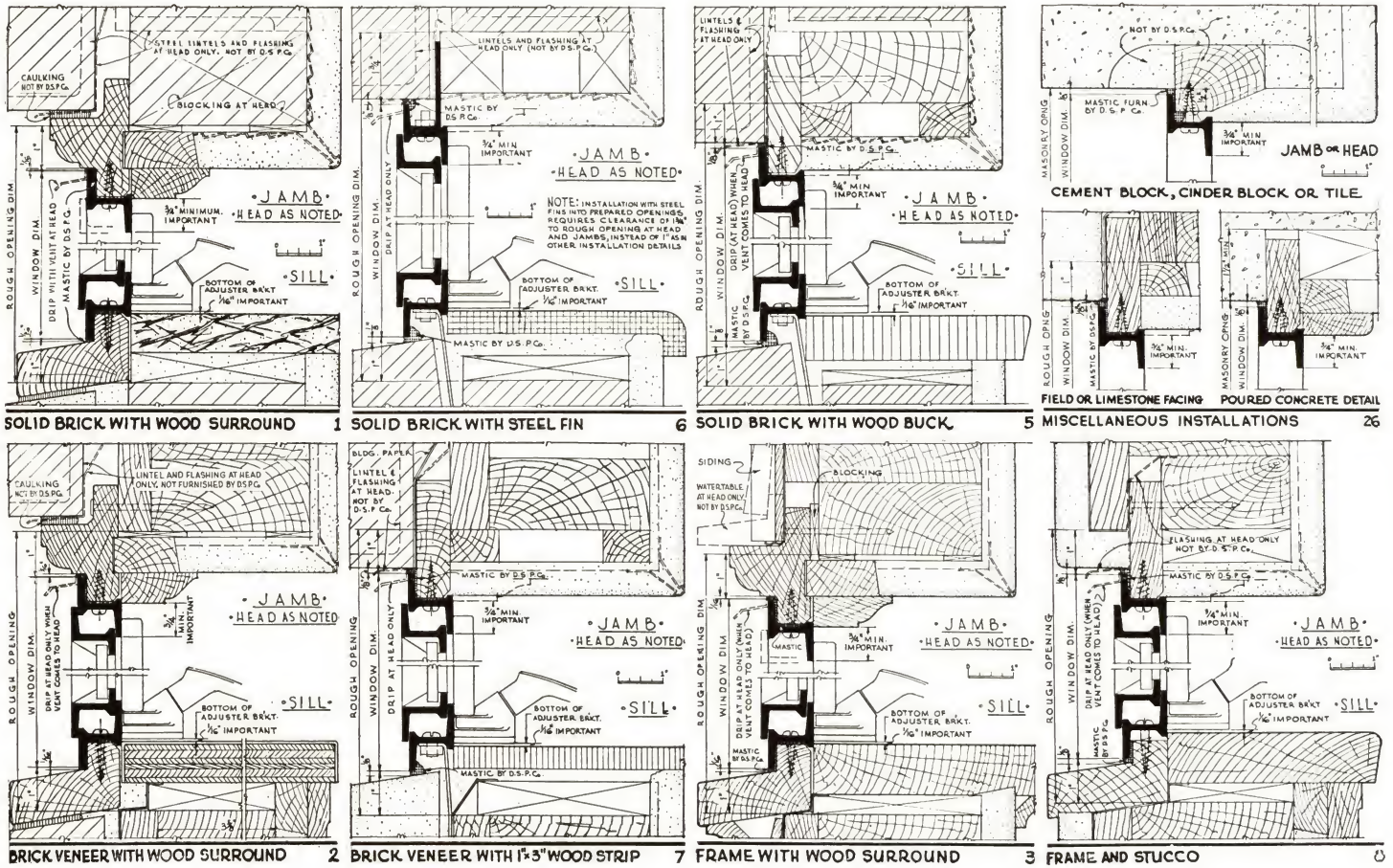
strength glass held by spring bronze glazing splines. (Semi-circular head types have frames of extruded aluminum.)

An extruded rubber weathering seal around the entire perimeter presses tightly against and completely covers the casement frame insulating it against heat transmission. Moulded rubber grommet fits tightly around the casement locking handle.

Window is held in place by steel plated wedge clips applied to trim on the inside or may be screwed direct to the casement frame, holes being drilled and tapped in the field.



Insulating Window for Standard and Economy types.



STEEL CASINGS

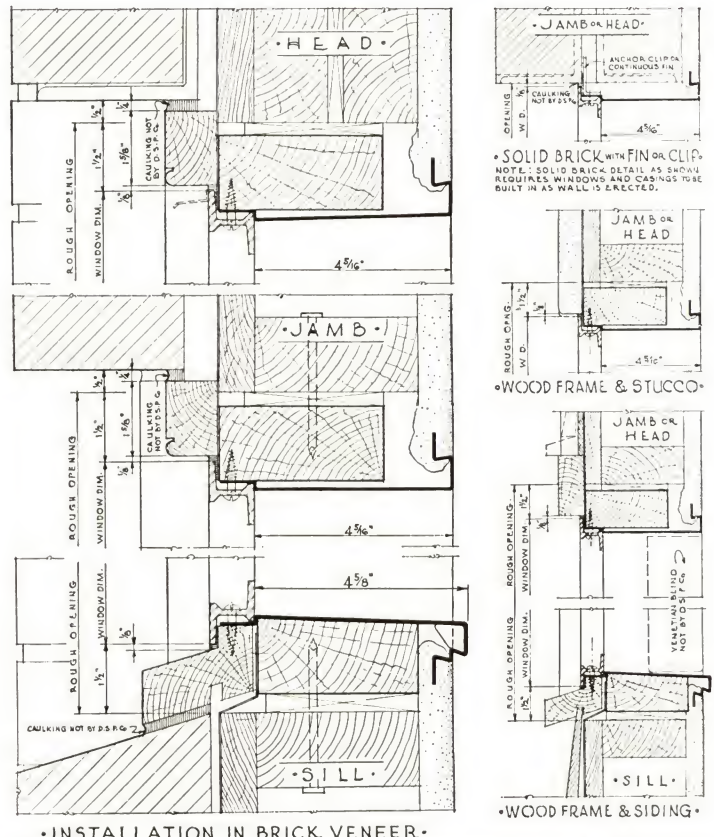
Fenestra pressed Steel Casings provide a simplified and economical means of installing Fenwrought Casements. Take the place of interior wood finish, plaster returns, stools and aprons and eliminate plaster troubles around windows. A smooth, durable, all steel, interior finish that is almost indestructible—cannot swell, shrink, burn, warp or discolor.

Casings are of 18 ga. steel and are made in stock sizes indicated below and in one depth only—4 1/8 in. (Special casings with 18 ga. head and jambs and 16 ga. sills and of varying depths are available where desired for Housing projects.) All members are hot rolled steel annealed smooth, with corners coped and fitted to a hair line crack. Inside face is 3/4 in. wide and is formed into a perforated plaster lock at its outer edge. Sill members project 1/4 in. beyond inside finished wall. Stock casings are Bonderized and given one coat of baked-on grey paint. Shipped already attached to single units of Fenwrought Casements. Cannot be supplied for two or more types combined by mullions.

Used on numerous large housing developments including Hillside Apartments, New York City, Ten Eyck (Williamsburg) Development, Brooklyn, and others.



12	22	42	62	82
13	23	43	63	83
14	24	44	64	84
15	25	45	65	85



STEEL CASING DETAILS

BASEMENT WINDOWS

Attached in a jiffy from the inside with an ordinary screw driver. Vertical mullions if desired.

UTILITY WINDOWS

Made in fixed or ventilated types in one size only: 3 ft.-3 $\frac{3}{4}$ in. wide by 3 ft.-7 $\frac{1}{4}$ in. high. Construction, hardware, screens and storm sash same as for Basement Windows.

Utility Windows have standard Fenestra Bonderized finish (See Page 1).

Utility Windows are especially adapted to provide light in basements where houses are set close to the grade. The lower panes are below the grade line and a grating over the areaway way makes the window appear 1-light high when viewed from the outside.

Also desirable for use in public and private garages, filling stations, stores, shops and farm buildings. The tilt-in ventilator

does not interfere with the use of space directly below the window and it admits abundant ventilation without direct draft.

"Utility" Window

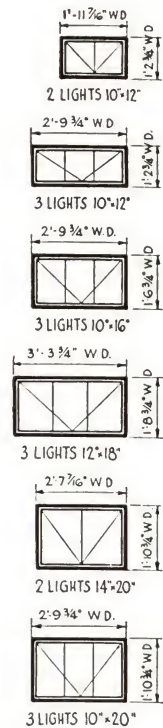
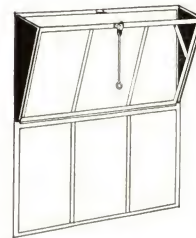
EXTENDED DRIP



PROTECTED WHEN OPEN

DRAFT GUARDS

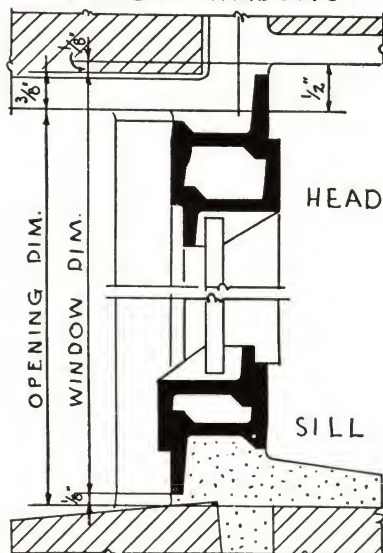
Triangular Draft Guards are available for Utility Windows to close the V-shaped apertures at jambs of ventilators. "Hopper Type" Units thus formed are particularly adaptable to cattle and stock barns. Draft guards are 18-gauge, pressed steel held by clips to the jamb fins (also punched for direct bolting to frames of Utility Windows already installed). The protected vent opening is 20 degrees but ventilator may be opened beyond the draft guards for cleaning.



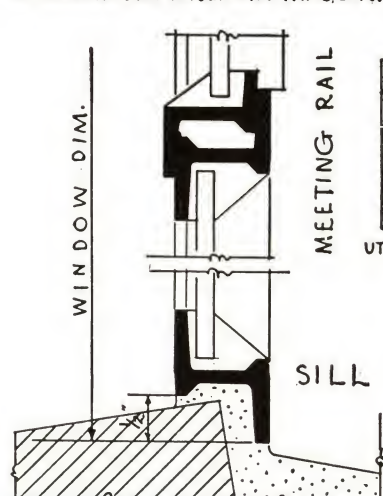
ber, imbeds in masonry and forms a guide for the mason in laying up both inside and outside wall. Head fins available at extra cost. Windows have standard Fenestra Bonderized finish (See Page 1).

Steel framed, bronze mesh, outside screens and outside storm sash are available where specified.

• BASEMENT WINDOWS •

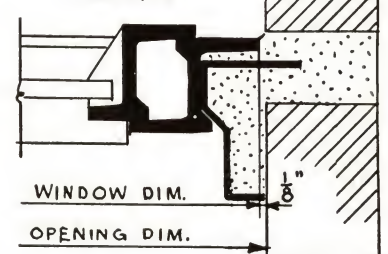


• UTILITY WINDOWS • HEAD DETAIL FOR UTILITY WINDOWS- IS SAME AS FOR BASEMENT WINDOWS.

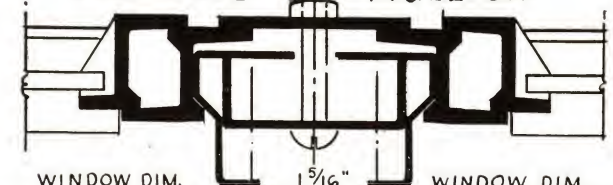


BASEMENT & UTILITY WINDOWS

JAMB



VERTICAL MULLION



BASEMENT & UTILITY WINDOWS

D-106

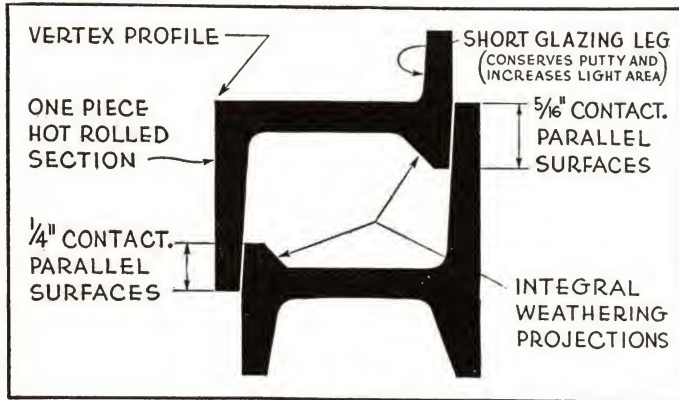
GENERAL WINDOW SPECIFICATIONS

FENCRAFT—FENMARK—PROJECTED FENMARK—DALMO-FENMARK—CUSTOM

These specifications apply particularly to the windows named and are to be used in connection with the individual information regarding these windows given on succeeding pages.

1—SECTIONS

Sections are solid, hot rolled, vertex profile steel, especially designed for the manufacture of casement windows. Weathering projections are rolled INTEGRAL with the sections to provide overlapping, parallel surface contacts of not less than $\frac{1}{4}$ in. at both outside and inside points of closure. Movable sash make both outside and inside contacts against one-piece, hot rolled section at head, jambs and sill.

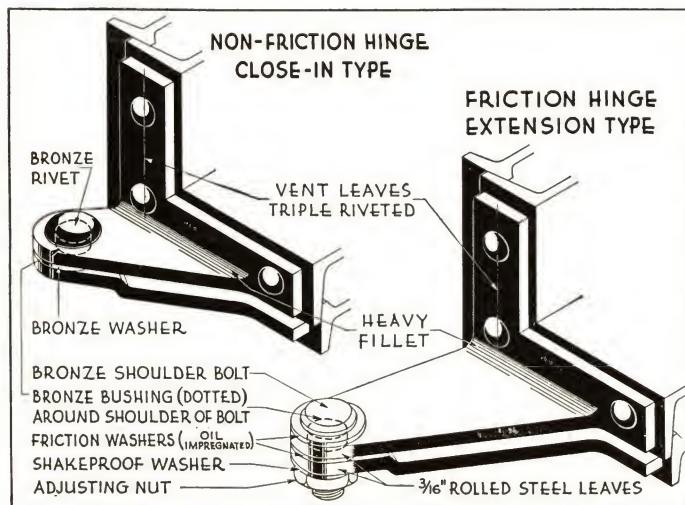


All sections are straightened by rerolling and are individually, electrically tested for straightness. Corners of all ventilators are electrically welded and ground smooth.

2—HINGES

Side Hung Ventilators are hung on "Extension Hinges" or on "Close In Hinges" of especially designed, vertex profile, solid, hot rolled steel. Hinge pins are solid bronze, accurately fitted into flanged bronze bushings. Top and Bottom Hung Ventilators are hung on flat, 5-knuckle hinges.

(Both "Extension" and "Close In" Hinges may be equipped with oil-impregnated, friction washers, eliminating the need of sill adjusters, but these "Friction" Hinges are not recommended where windows are to be screened, as they cannot be used with Fenestra Flat Screens.)



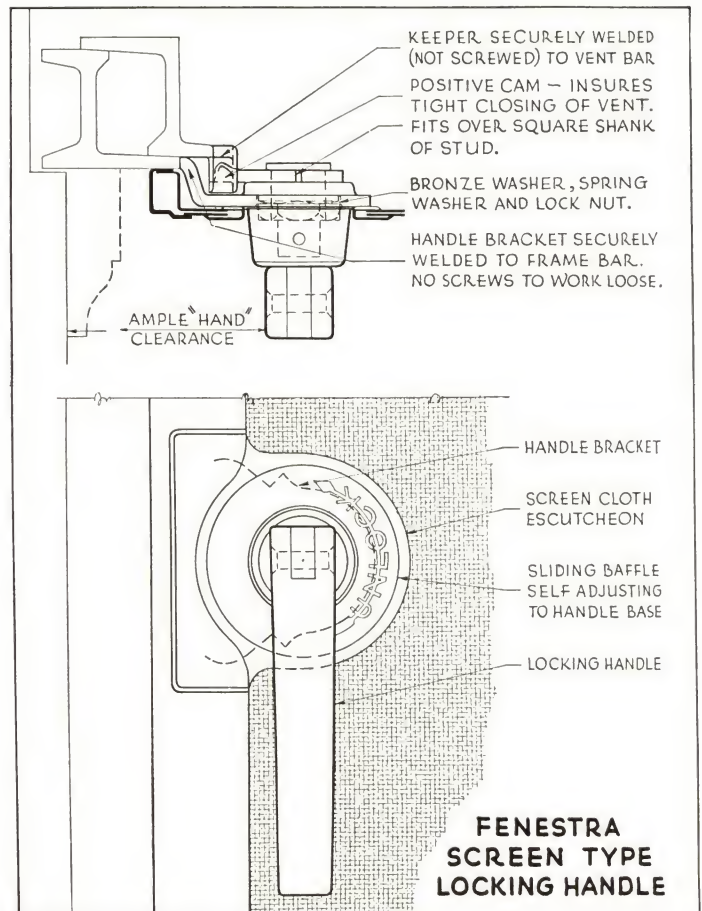
3—WINDOW CLEANING

(Windows with projected ventilators or with single, side-hung ventilators on extension hinges, or with two, adjacent side hung ventilators on close-in hinges, may be cleaned on the outside from the inside. Windows with single ventilators on close-in hinges must be cleaned from the outside.)

4—LOCKING HANDLES

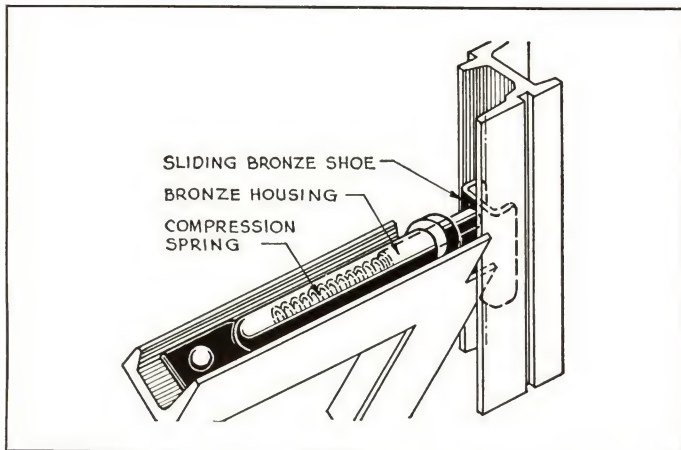
All Locking Handles are of Specification Solid Bronze unless otherwise specified and are of ornamental design attached to ornamental brackets either by screws or friction clevises.

Handles on Side Hung, Screen Type swing leaves are of hinged design to permit their being slipped through screen escutcheons. When windows contain ventilators or swing leaves beyond reach from the floor, handles suitable for pole operation are supplied. (See Locking Handle designs under various window types.)



5—SLIDING SHOES

Projected Ventilators are supported on heavy, spring steel, bronze pivoted side arms and are equipped with two bronze, sliding, friction shoes, the friction being maintained by compression springs of heavy, rust-proofed, music wire, completely enclosed in bronze housings.

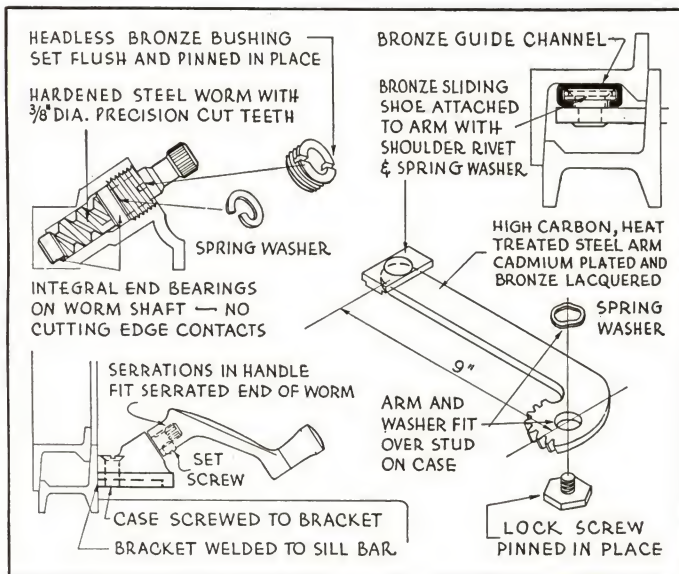


(Projected ventilators used at the sills of windows, tilt in from the top while sliding up from the bottom. Projected ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

6—ADJUSTERS

Side Hung Ventilators are either (a) Screen Type, equipped with non-friction hinges and Roto-Adjusters or (b) Standard Type, equipped with friction hinges but no adjusters. Sliding Friction Adjusters can be supplied as specials if so specified.

(The Fenestra Roto-Adjuster is attached at the sill of the casement to permit opening or closing the swing leaf without touching the screen. It consists of a hardened, solid steel shaft with machine cut teeth, the ends of the shaft formed into cylindrical bearings. The



upper end of the shaft carries a spring washer, a headless, Everdur Bronze bushing and a bronze Adjuster Handle.

(The machine cut teeth are meshed with a gear and arm blanked from a single piece of heat treated, high carbon, rolled steel. The outer end of the arm carries a brass shoe which slides in an especially designed, drawn brass channel guide on the under side of the swing leaf.

(Worm shaft and gear are housed in a bronze case which rests on a solid, rolled steel bracket and is held by three screws. The bracket is solidly welded to the casement frame in such a position that the window stool is easily fitted without notching.)

Top Hung Ventilators are either (a) Screen Type with under-screen, Notched Stay Adjusters or (b) Standard Type with Peg and Stay Adjusters. Projected Out Ventilators may be equipped with 15 in. Underscreen, Stay Adjusters and Fenestra Flat Screens at extra cost when specified.

7—SHADING

Most windows are drilled at both jambs near the head for the attachment of shade brackets—brackets to be supplied by the shading contractor. Shade bracket clips, accommodating any standard shade bracket can be supplied at extra cost where specified.

(Where inside swinging, sliding or rolling screens are used care should be taken to locate the shades and drapery brackets with due regard for screen clearance. See Section 9.)

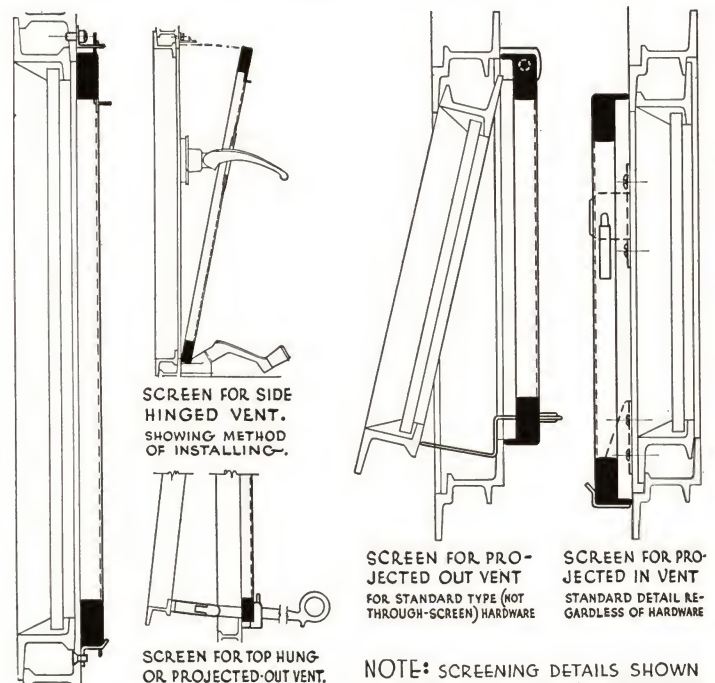
8—MULLIONS

Mullions and Transom Bars are provided between adjacent windows where specified.

(In Fenmark or Projected Fenmark types, the mullions may be omitted where specified and narrow vertical lines may be secured by bolting the jambs of the adjacent windows together. See Plate G-425.)

9—SCREENING

(Fenestra Screen Type Windows with Fenestra Flat Screens are recommended for all Fenmark, Fencraft and Custom Windows where screens are required. Fenestra Standard Type windows do not accommodate Flat Screens but, if necessary, may be screened with swinging, sliding or rolling screens. Fenestra Flat Screens are available for use on Projected Fenmark Windows.)



FENESTRA FLAT SCREENS FOR SCREEN TYPE WINDOWS WITH THROUGH-SCREEN HARDWARE ~ ~

RECOMMENDED FOR ALL FENMARK, FENMARK AND CUSTOM WINDOWS WHEN SCREENS ARE REQUIRED. SCREENS ARE UNDISTURBED IN OPERATING VENTS BUT ARE EASILY REMOVED AND REPLACED FOR STORAGE OR WINDOW WASHING

NOTE: SCREENING DETAILS SHOWN APPLY TO FENMARK, PROJECTED FENMARK, FENCRAFT AND CUSTOM WINDOWS FOR SCREENING OF SIDE HINGED OPEN IN AND BOTTOM HINGED VENTS CONSULT D.S.P. Co. REPRESENTATIVE.

HOLES ARE SUPPLIED IN SASH FOR ATTACHMENT OF SCREEN FITTINGS. CLIPS AND SCREWS FURNISHED WITH SCREENS.

SCREENING DETAILS

FOR FENMARK, PROJECTED FENMARK, FENCRAFT & CUSTOM WINDOWS G-426

Fenestra Flat Screens for all Screen Type, Open-Out Ventilators lie flat against the inside of the window frame and permit complete operation of the swing leaves—opening, closing and locking—without touching the screen. Screens for all Open-In Ventilators are set flat against the outside of the window frame.

Screen have frames of cold rolled steel, with continuous, internal, triangular reinforcement. Frames Bonderized and painted two coats of gray enamel, the first coat baked on. Cloth is 16-mesh, .0113 in. bronze wire. All screens are removable and rewirable. A circular aperture in each screen permits it to fit snugly over and around the locking handle.

(Screens are available with bronze frames or with aluminum frames and aluminum wire cloth. Also with finer than 16-mesh. Extra cost where specified.)

10—PAINTING

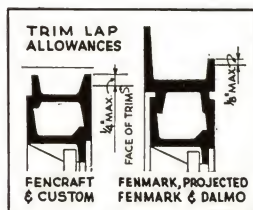
All windows, screens, etc., receive adequate shop painting to protect them during transportation to the building site. Provision should be made for field painting by the painting contractor. One metal protective coating should be applied to thoroughly cleaned surfaces after erection and before glazing. Final painting should be deferred until about three weeks after glazing to allow the putty to set.

At slight extra cost, windows can be supplied with a new rust-resisting finish which includes Bonderizing, painting, and oven baking. See page 1.

11—ERECTION

(Wherever possible, windows should be erected in prepared openings by the window manufacturer after all mason work has been completed.)

(Inside trim or plaster must be kept back to provide clearance for screens, fittings, etc., in accordance with "Trim Lap Allowances" indicated. See also installation details under various window types.)



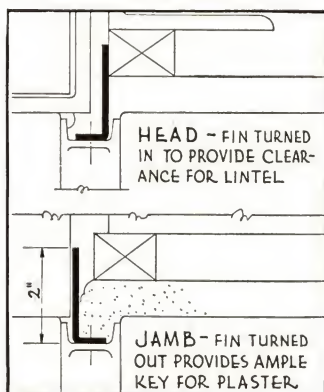
Mastic is supplied by the window manufacturer for sealing at masonry sills and at vertical or horizontal connections between all windows having UNEQUAL leg frame section; and for sealing the entire perimeter of windows having EQUAL leg frame section.

Steel strap anchors are supplied for anchoring windows to building construction unless steel fins or subframes are specified.

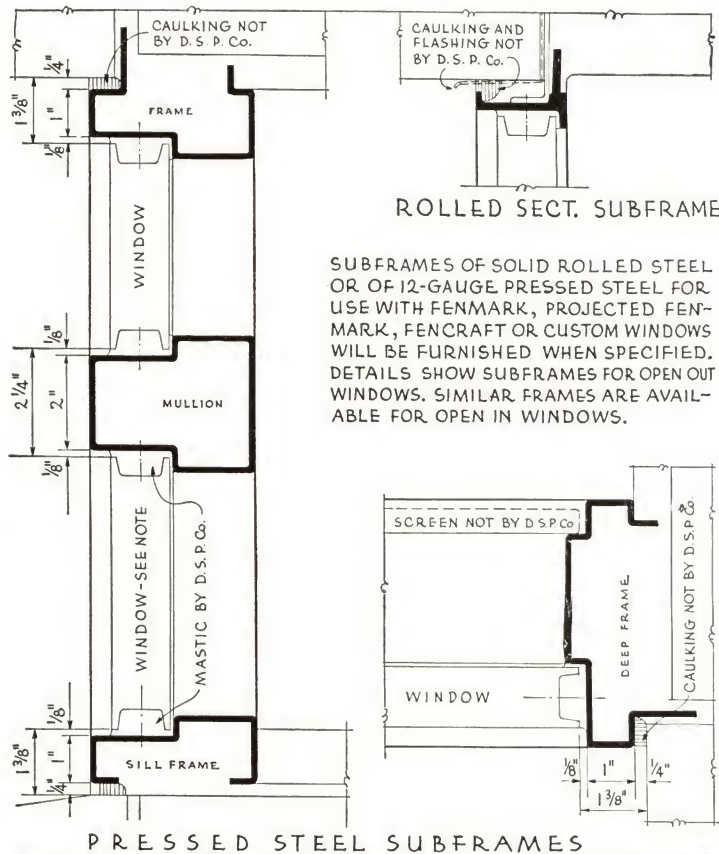
12—STEEL FINS AND SUBFRAMES

Continuous steel fins are available at slight extra cost when specified. They are shipped attached to jambs or head (or both) of windows. Cannot be used at mullions of multiple units. They provide continuous deep anchorage and increase the weathertightness of installation particularly with windows of equal leg frame sections.

Subframes of solid rolled steel or of 12-gauge pressed



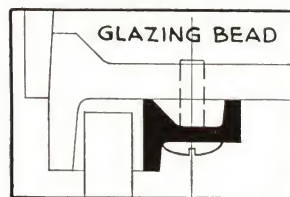
steel available for use with Fenmark, Projected Fenmark, Fenecraft or Custom Windows where specified. Consult the nearest Fenestra representative.



ROLLED OR PRESSED STEEL SUBFRAMES A-530

13—GLAZING

All windows should be glazed on the outside with high grade steel window putty, neatly applied. Each light should be bed-puttied, secured by spring glazing clips furnished by the window manufacturer, and then face puttied.



(Outside putty glazing is recommended in all cases, particularly for Fenmark and Projected Fenmark Windows. Glazing beads can be furnished at extra cost where specified, and, when used, INSIDE glazing is advisable. Plate glass is recommended.)

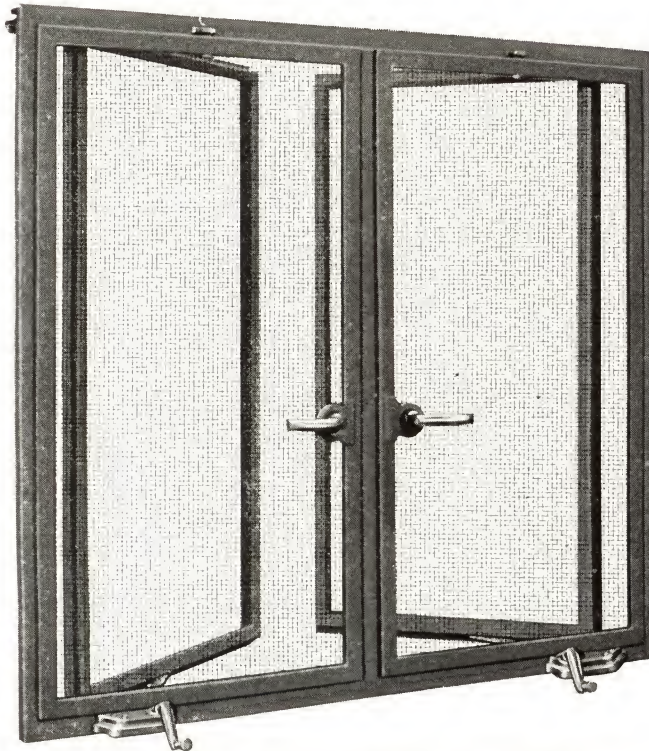
14—ALUMINUM WINDOWS

Fenmark, Projected Fenmark, Fenecraft and Custom Windows may be secured in extruded aluminum sections equipped with white metal hardware and aluminum framed screens. Consult the nearest Fenestra representative.

15—UNDERWRITERS' LABEL WINDOWS

Fenmark, Projected Fenmark, Fenecraft and Custom Windows can be supplied bearing the Underwriters' Label. Glass sizes are limited to a maximum of 48 in. in either dimension and an exposed glass area of 350 sq. in. In Fenmark and Projected Fenmark Types the ventilators may open in or out. In Fenecraft Types the ventilators must open out. In all windows, 1/4 in. glass must be used. In other respects, labeled windows conform to standard Fenestra products.

FENCRAFT CASEMENTS



Fencraft Screen Type Casement With Fenestra Flat Screens.

All General Specifications on Pages 10, 11 and 12 apply except Section 5.

Designed for use in fine residences, clubs, apartments, theaters, churches, hospitals, dormitories, hotels, fraternities, schools, and university buildings, and all structures requiring windows of superior design and quality.

Supplied in both Screen and Standard Types.

(It is important to determine at the outset, which of these types is to be used.)

Frame and ventilator sections are $1\frac{1}{4}$ in. deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered, electrically butt welded and ground to a smooth finish. Frame sections may be equipped with continuous steel fins for anchorage if required.

Standard side hung ventilators open out but in certain types may be designed to open in if so specified. Transom types may be top hinged open out or bottom hinged open in. Sill vents



Exterior of Fencraft Standard Type Casement.

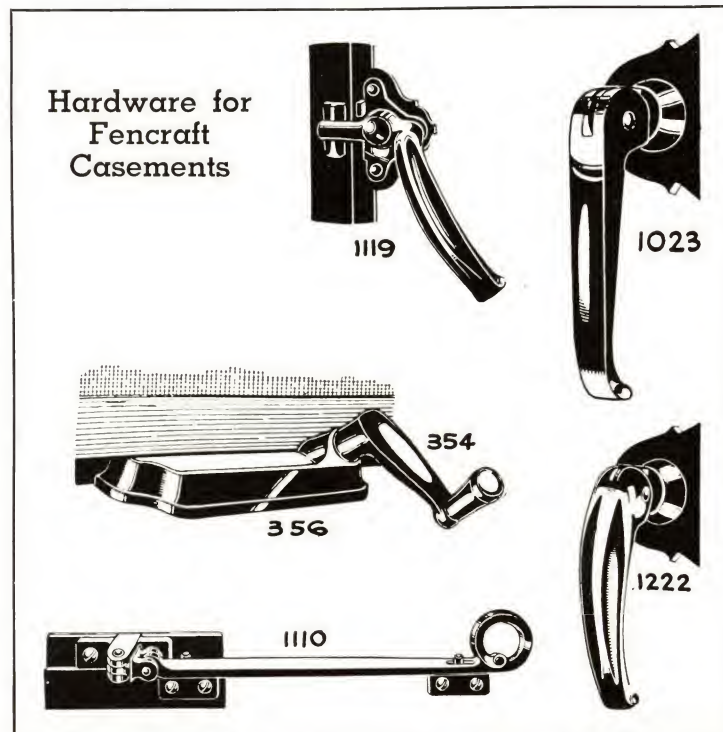
are bottom hung open in. Combinations of units may be made to fill almost any sized opening and provide almost any degree of ventilation.

Specification, Bronze hardware is standard. For Screen Types, Handle 1023, Roto-Adjuster 356, Adjuster Handle 354. For Standard Types Handle 1119. Hardware available as special includes Handle 1222, Adjuster Handle 355, Thumb Screw Stay 1101, Transom Stays 1110 and 1108. Extra heavy Roto-Adjuster is available at extra cost were specified.

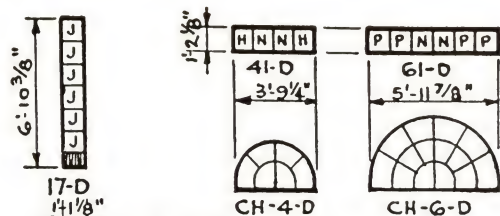
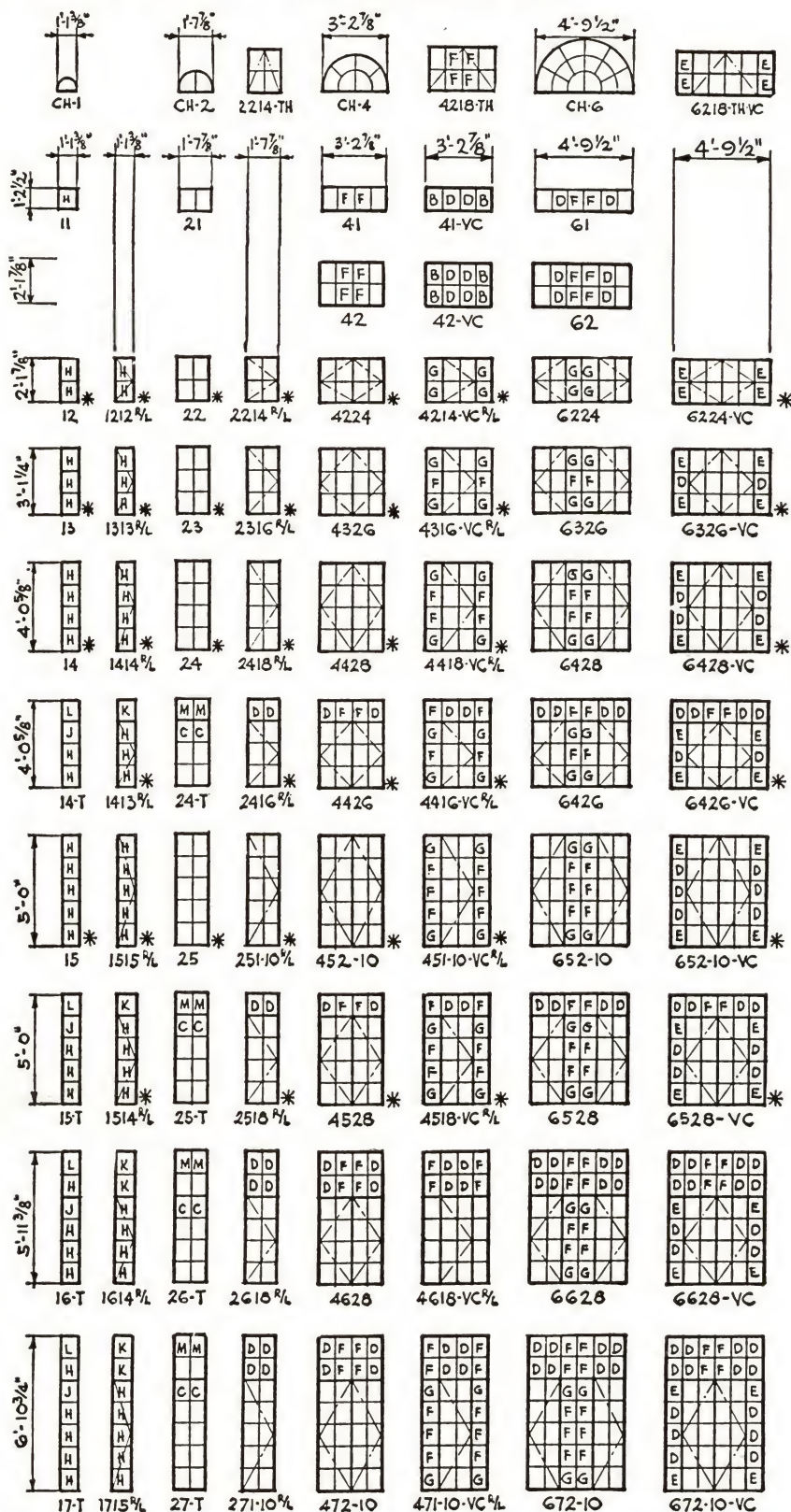
We strongly urge the use of Quick Shipment types and sizes shown on Page 14 supplied with standard hardware only. These types are available as shown or with muntins wholly or partially omitted to accommodate leaded glass or provide horizontal lights popular in Spanish and Modern architecture.

"Inside Insulating Window" Available for Screen Types if desired. Consult the nearest Fenestra representative.

Hardware for Fencraft Casements

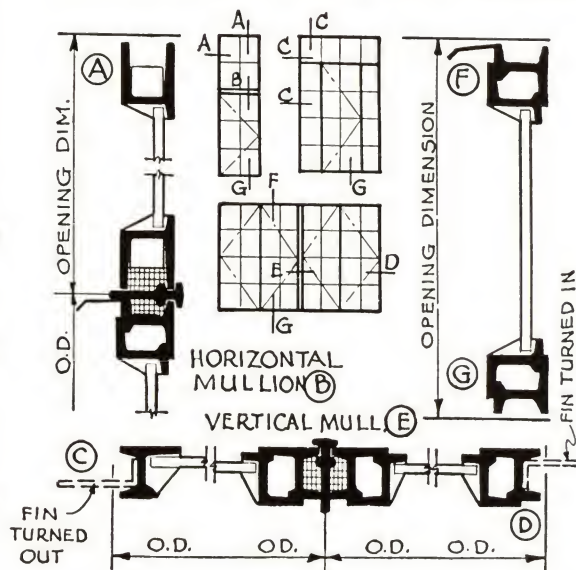


* TYPES SHOWN WITH ASTERISK ARE QUICK SHIPMENT TYPES, AND ARE FURNISHED WITH MUNTINS AS SHOWN OR WITH MUNTINS OMITTED. ANY TYPE FURNISHED WITH MUNTINS OMITTED WHEN SO SPECIFIED.



UNITS USED WITH DOORS

SIZES SHOWN ON ABOVE TYPES ONLY ARE ACTUAL WINDOW DIMENSIONS.



NOTE

EXCEPT AS NOTED ABOVE (UNITS USED WITH DOORS) ALL SIZES SHOWN ARE OPENING DIMENSIONS AND ALLOW CLEARANCE FOR INSTALLING. SEE DETAILS.

All units are outside putty glazed and have open out vents. No glazing angles and no open in vents permitted.

Hardware for Screened Types includes: Handle No. 1023-SB; Roto-Adjuster No. 356-SB; Roto-Handle No. 354-SB; Non-friction Hinges. Hardware for Non-Screen Types includes: Handle No. 1119-SB and Friction Hinges. (No stay adjusters.)

Details as shown above are standard and are the only ones that can be supplied on Quick Shipment Types.

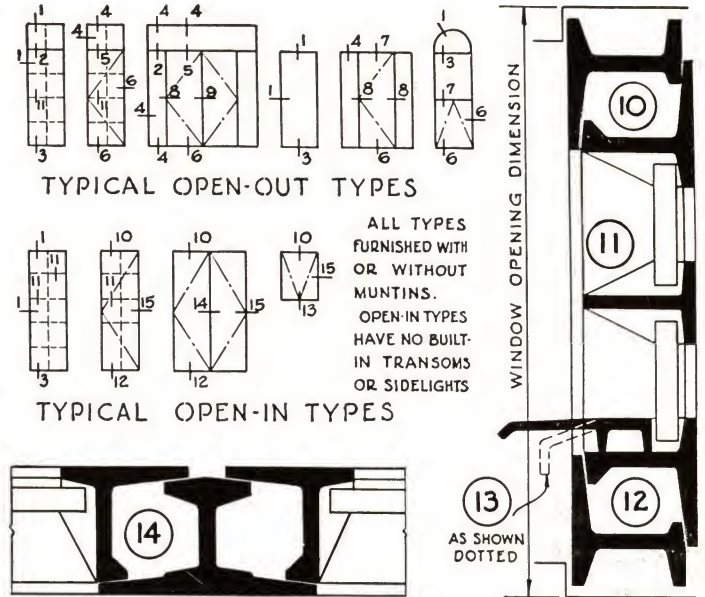
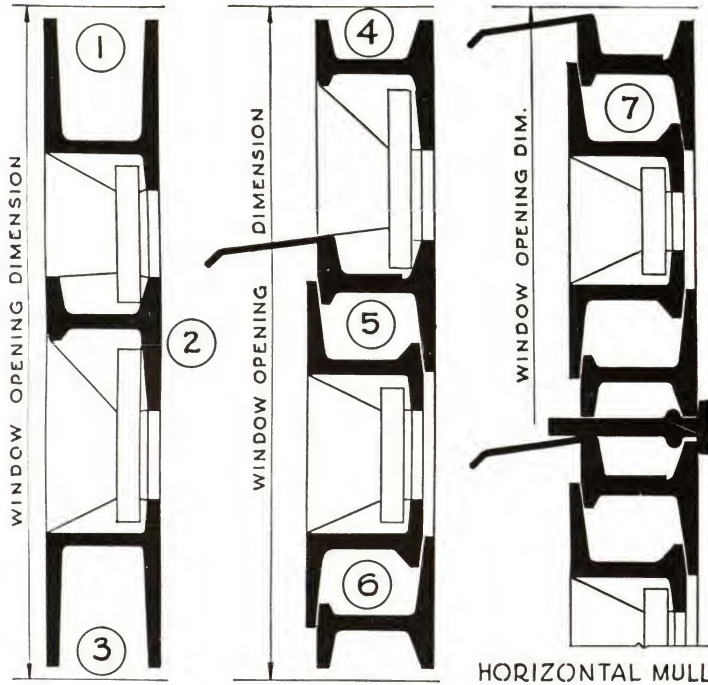
"VC" indicates "Vent in Center"; "R/L" indicates casement may be either "Right" or "Left" Hand. Viewed from outside, a Right Hand Casement is hinged at the right, a Left Hand Casement is hinged at the left.

Drips are supplied over all ventilators at no extra charge. Fins supplied at head and jambs only, at extra cost where specified. State whether fin should turn in or out. (See details.)

• GLASS SIZES •

A	8" x 11"	F	9 7/8" x 11"	L	10" x 10 7/8"
B	8 1/4" x 11"	G	9 7/8" x 11 7/8"	M	8" x 10 7/8"
C	8" x 11 7/8"	H	10" x 11"	N	10 1/2" x 11"
D	8 7/8" x 11"	J	10" x 11 7/8"	P	11 1/2" x 11"
E	8 7/8" x 11 7/8"	K	11 5/8" x 11"		

NOTE: LIGHTS NOT LETTERED ARE 8" x 11" (A) EXCEPT THOSE IN CH-UNITS WHICH ARE CUT TO TEMPLATES. ~



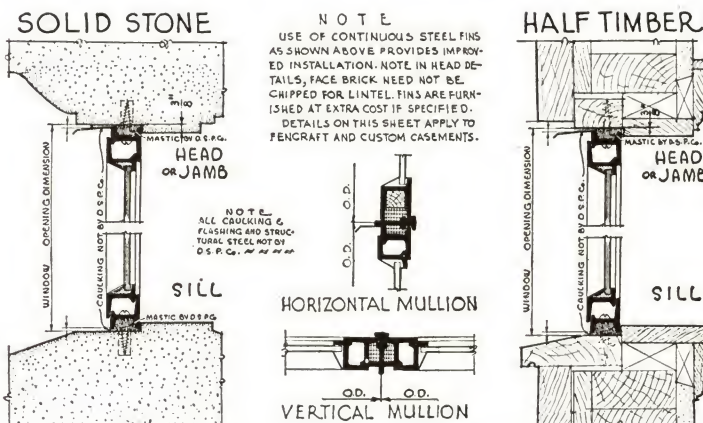
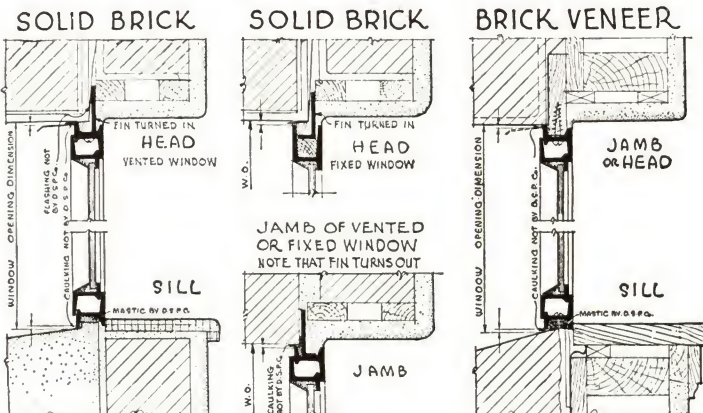
TYPICAL OPEN-OUT TYPES

TYPICAL OPEN-IN TYPES

ALL TYPES
FURNISHED WITH
OR WITHOUT
MUNTINS.
OPEN-IN TYPES
HAVE NO BUILT-
IN TRANSOMS
OR SIDELIGHTS

FENCRAFT CASEMENTS

A-526

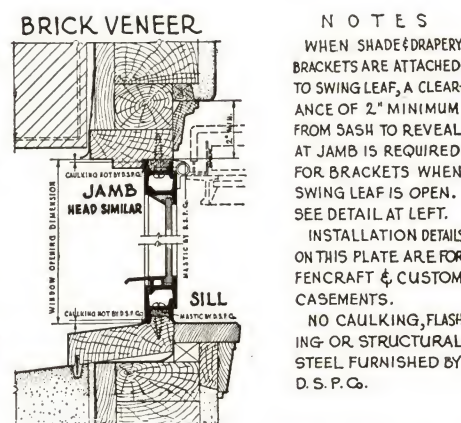
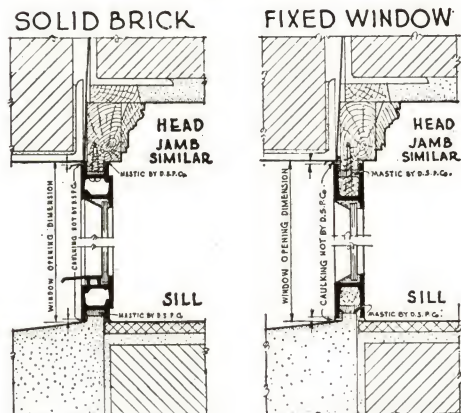


FENCRAFT & CUSTOM OPEN OUT

A-525

FENCRAFT CASEMENTS

A-527



FENCRAFT & CUSTOM OPEN IN

TYPES & SIZES
FENCRAFT OPEN IN ONLY

221-4-0H-01	221-4-01-01	422-4-01-01
251-6-01-01	432-6-01-01	442-6-01-01
241-8-01-01	452-8-01-01	462-8-01-01
251-10-01-01	472-10-01-01	482-10-01-01

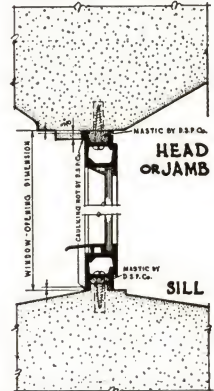
NOTES

WHEN SHADE & DRAPERY
BRACKETS ARE ATTACHED
TO SWING LEAF, A CLEAR-
ANCE OF 2" MINIMUM
FROM SASH TO REVEAL
AT JAMB IS REQUIRED
FOR BRACKETS WHEN
SWING LEAF IS OPEN.
SEE DETAIL AT LEFT.

INSTALLATION DETAILS
ON THIS PLATE ARE FOR
FENCRAFT & CUSTOM
CASEMENTS.

NO CAULKING, FLASH-
ING OR STRUCTURAL
STEEL FURNISHED BY
D. S. P. Co.

SOLID STONE



A-308

FENMARK WINDOWS



Fenmark Window With
Fenestra Flat Screens
(Muntins Omitted).

All General Specifications on Pages 10, 11 and 12 apply.

Designed for use in Office Buildings, Hospitals and all types of monumental, educational and public buildings.

Vertical lines especially adapted to modern stepped back designs. Windows lend themselves to combination with metal stools and fully or semi-concealed radiation.

Supplied in Screen and Standard Types.

Frame sections are $1\frac{1}{2}$ in. deep from front to back with unequal legs. Frame corners are mortised and tenoned, air hammer riveted and welded. Ventilator sections and muntins are $1\frac{1}{4}$ in. deep from front to back. Vent corners are electrically butt welded. Muntins often are omitted to permit the use of large single panes of plate glass.

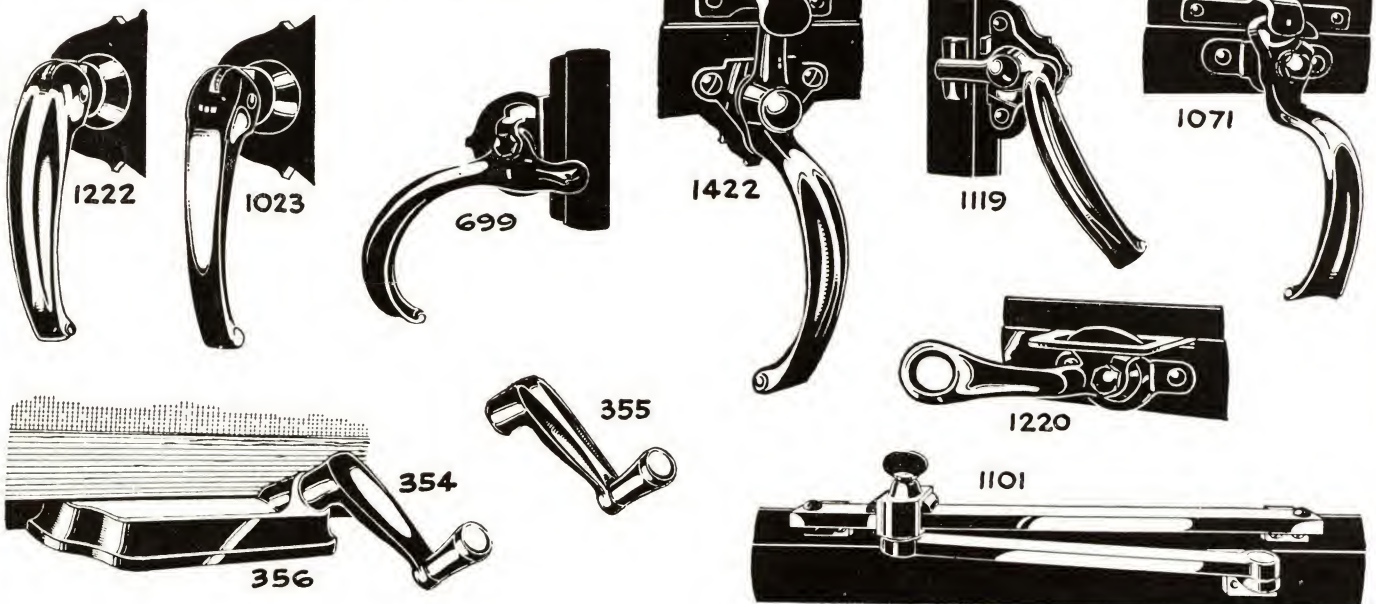
This window features a Projected-In ventilator at the sill which serves as a wind guard, deflecting drafts upward.

Transom Types may be either Projected-In or Projected-Out. Transoms and sill ventilators may be combined with side hung types by means of transom bars to provide windows of almost any height or width and almost any degree of ventilation up to 100%.

Specification, solid bronze hardware (SB) is standard. For Screen Types Handle 1023, Roto Adjuster 356, Adjuster Handle 354. For Standard Types, Handles 699, 1071 and 1220. Hardware available as special includes: Handles 1119, 1422, 1222; Adjuster Handle 355 and Thumb Screw Stay 1101.

We strongly recommend the use of Quick Shipment Types and Sizes shown on Page 17, supplied with standard hardware only.

Hardware for Fenmark Windows



QUICK SHIPMENT DETAILS

QUICK SHIPMENT DETAILS

Diagram showing typical combinations of window details, including various frame and glass configurations labeled 1 through 13.

1
20
21
13
14
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100

TYPICAL COMBINATIONS

NOTE

DETAIL 21 CAN BE USED ONLY FOR COMBINATIONS OF LIMITED WIDTH (CONSULT D.S.-P.G.).

DETAIL 20 CAN BE USED FOR ANY COMBINATION.

Diagram showing details for direct bolting and plate mullion, including dimensions and labels 1 through 13.

1
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3
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10
11
12
13

GENERAL NOTES

WINDOW OPENING DIMENSIONS ARE SHOWN AT EXTREME LEFT AND AT THE BOTTOM BUT FRAME MEMBERS PROJECT BEYOND THESE POINTS FOR ANCHORAGE.

GLASS WIDTHS AND HEIGHTS ARE GIVEN BOTH FOR FIXED LIGHTS AND LIGHTS IN VENTILATORS. THESE VARY CONSIDERABLY DEPENDING ON THE TYPES.

BE CAREFUL TO USE THE PROPER "FIXED GLASS" HEIGHT WITH THE PROPER "FIXED GLASS" WIDTH AND THE PROPER "VENT GLASS" HEIGHT WITH THE PROPER "VENT GLASS" WIDTH.

T = TRANSOM FT = FIXED TRANSOM

R/L = RIGHT OR LEFT HAND SIDE HINGED VENT.

1/2 = SIDE HINGED
1/2 = PROJECTED OUT HINGED
1/2 = PROJECTED IN HINGED

* INDICATES QUICK SHIPMENT TYPES

ALL QUICK SHIPMENT TYPES MUST INCLUDE DETAILS AS SHOWN ABOVE AND QUICK SHIPMENT HARDWARE AS SHOWN UNDER SPECIFICATIONS. NO OTHER DETAILS OR HARDWARE ARE AVAILABLE FOR QUICK SHIPMENT.

PROJECTED FENMARK WINDOWS

All General Specifications on Pages 10, 11 and 12 apply except Section 2.

Designed for use in monumental, educational and public buildings, particularly where weather protection is desired while the ventilators are open. Projected-Out Ventilators in an open position form a canopy above the opening. Projected-In Ventilators shed water toward the outside.

Frame Sections are $1\frac{1}{2}$ in. deep from front to back with unequal legs. Frame corners are mortised and tenoned and air hammer riveted. Ventilator Sections and Muntins are $1\frac{1}{4}$ in. deep from front to back. Vent corners are electrically butt welded.

Projected Fenmark Windows are similar in construction to Fenmark Types except that all ventilators are of the "projected" type opening in or out as specified.

For operation of ventilators note particularly Section 5 of the General Specifications.

Where screens are desired with Projected-Out Ventilators, Fenestra Flat Inside Screens and a 15 in. Underscreen Stay Adjuster are available at slight extra cost. (See Sections 6 and 9, General Specifications.)

Ventilators usually are arranged so that all glass may be cleaned on both sides from inside of the room.

Specification, solid bronze hardware (SB) is standard. For Projected-Out Types, Handles 733 and 914, Pole Ring 151 or Stay 1108, friction shoes, alignment stops. For Projected-In Types, Handles 1071 and 1220, friction shoes.

We strongly urge the use of Quick Shipment types and sizes shown on Page 19 supplied with standard hardware only.



Projected Fenmark Window With Projected-Out and Projected-In Ventilators.

Hardware for Projected Fenmark Windows



914



733



1220



151



1071



1108

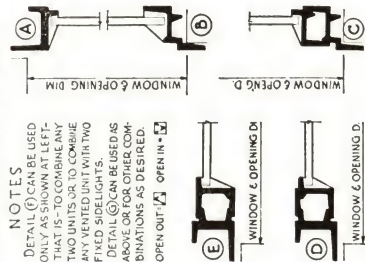
• COMBINATIONS AND SECTION DETAILS •

NOTES

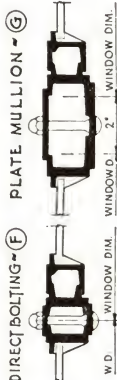
DETAIL (C) CAN BE USED ONLY AS SHOWN AT LEFT—TO COMBINE ANY TWO UNITS OR TO COMBINE ANY VENTED UNIT WITH TWO FIXED SIDELIGHTS.

DETAIL (C) CAN BE USED AS ABOVE OR FOR OTHER COMBINATIONS AS DESIRED.

OPEN ON T₁ OPEN IN T₂



TYPICAL COMBINATIONS OF UNITS.



Details as shown above are standard and are the only ones supplied on Quick Shipment Types.

Hardware for Projected-Out Vents includes: Bronze Handles Nos. 733 or 914; Pole Ring No. 151; Stay 1108; friction shoes; alignment stops.

Hardware for Projected-In Vents includes: Bronze Handles Nos. 1071 or 1220; friction shoes.

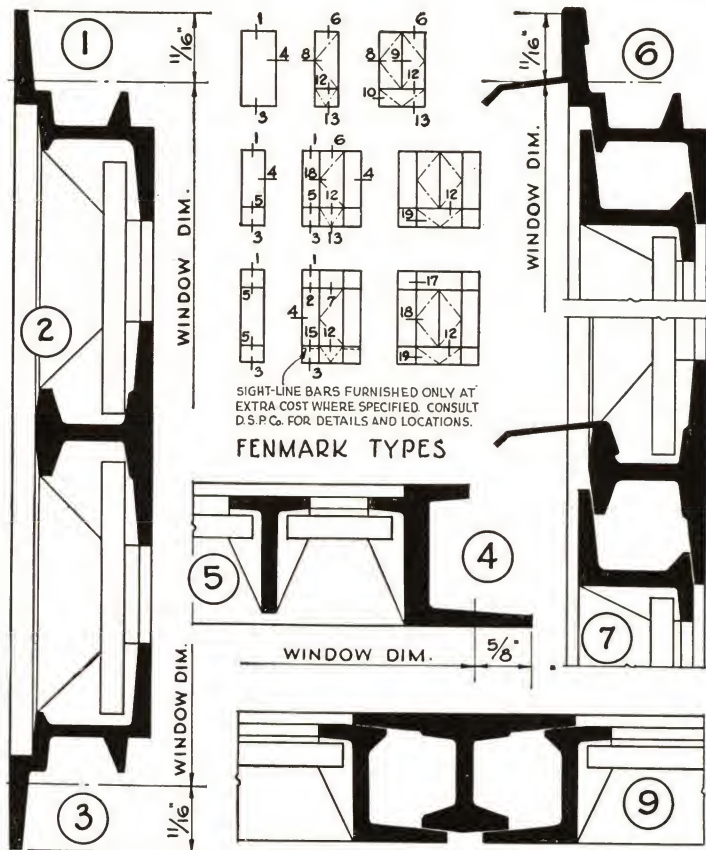
Units may be combined (see detail F and G above), but detail lines will not be carried through. When units are combined by direct bolting (Detail F) nothing need be added to the dimensions of the units, but the maximum combined width must not be over 9' 9". When units are combined by plate mullion (Detail G) add 1/2" to the window dimensions for every mullion used.

Figures of extreme left and at the bottom are opening dimensions. Windows are equal to opening dimensions but frame members project beyond these dimension points for anchorage.

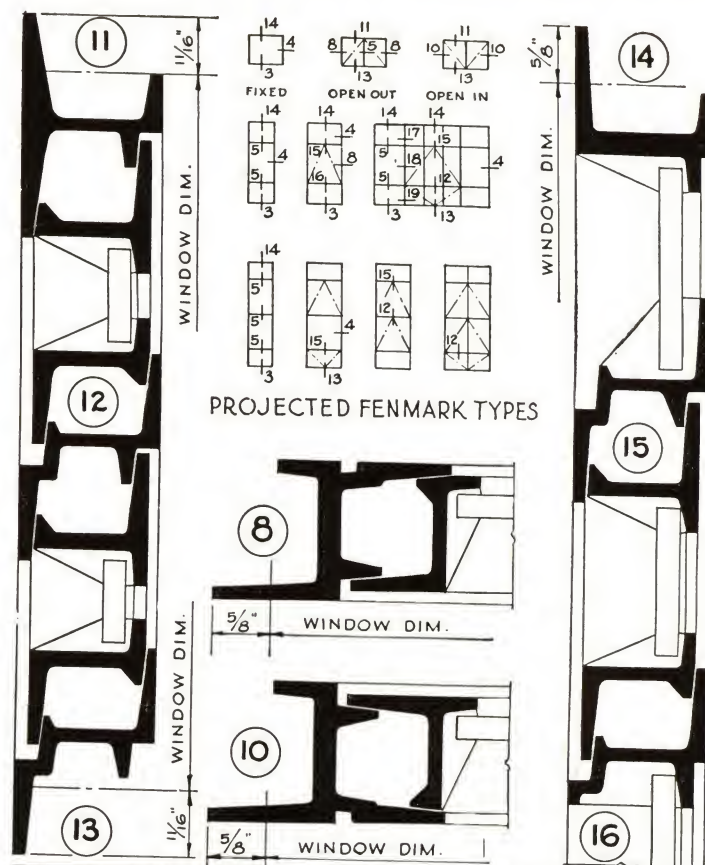
Glass widths and heights are given, both for fixed lights and for lights in ventilators. Be sure to use "Fixed Glass" widths with "Fixed Glass" heights and "Vent Glass" widths with "Vent Glass" heights.

FIXED GLASS										PROJECTED FENMARK									
14"	14"	14"	14"	14"	14"	14"	14"	14"	14"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
FM-116-FT	FM-117-FT	FM-118-FT	FM-119-FT	FM-120-FT	FM-121-FT	FM-122-FT	FM-123-FT	FM-124-FT	FM-125-FT	FM-119-T	FM-120-T	FM-121-T	FM-122-T	FM-123-T	FM-124-T	FM-125-T	FM-126-T	FM-127-T	FM-128-T
13 5/8"	24"	24"	24"	24"	24"	24"	24"	24"	24"	22"	22"	22"	22"	22"	22"	22"	22"	22"	22"
FM-1-F	FM-2-F	FM-3-F	FM-4-F	FM-5-F	FM-6-F	FM-7-F	FM-8-F	FM-9-F	FM-10-F	FM-5	FM-4	FM-3	FM-2	FM-1	FM-6	FM-7	FM-8	FM-9	FM-10
13 5/8"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-11-F	FM-12-F	FM-13-F	FM-14-F	FM-15-F	FM-16-F	FM-17-F	FM-18-F	FM-19-F	FM-20-F	FM-11	FM-12	FM-13	FM-14	FM-15	FM-16	FM-17	FM-18	FM-19	FM-20
13 5/8"	24"	24"	24"	24"	24"	24"	24"	24"	24"	22"	22"	22"	22"	22"	22"	22"	22"	22"	22"
FM-21-F	FM-22-F	FM-23-F	FM-24-F	FM-25-F	FM-26-F	FM-27-F	FM-28-F	FM-29-F	FM-30-F	FM-21	FM-22	FM-23	FM-24	FM-25	FM-26	FM-27	FM-28	FM-29	FM-30
16 1/4"	24"	24"	24"	24"	24"	24"	24"	24"	24"	22"	22"	22"	22"	22"	22"	22"	22"	22"	22"
FM-31-F	FM-32-F	FM-33-F	FM-34-F	FM-35-F	FM-36-F	FM-37-F	FM-38-F	FM-39-F	FM-40-F	FM-31	FM-32	FM-33	FM-34	FM-35	FM-36	FM-37	FM-38	FM-39	FM-40
13 3/4"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-41-F	FM-42-F	FM-43-F	FM-44-F	FM-45-F	FM-46-F	FM-47-F	FM-48-F	FM-49-F	FM-50-F	FM-41	FM-42	FM-43	FM-44	FM-45	FM-46	FM-47	FM-48	FM-49	FM-50
19 1/4"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-51-F	FM-52-F	FM-53-F	FM-54-F	FM-55-F	FM-56-F	FM-57-F	FM-58-F	FM-59-F	FM-60-F	FM-51	FM-52	FM-53	FM-54	FM-55	FM-56	FM-57	FM-58	FM-59	FM-60
19 1/4"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-61-F	FM-62-F	FM-63-F	FM-64-F	FM-65-F	FM-66-F	FM-67-F	FM-68-F	FM-69-F	FM-70-F	FM-61	FM-62	FM-63	FM-64	FM-65	FM-66	FM-67	FM-68	FM-69	FM-70
16 1/4"	24"	24"	24"	24"	24"	24"	24"	24"	24"	22"	22"	22"	22"	22"	22"	22"	22"	22"	22"
FM-71-F	FM-72-F	FM-73-F	FM-74-F	FM-75-F	FM-76-F	FM-77-F	FM-78-F	FM-79-F	FM-80-F	FM-71	FM-72	FM-73	FM-74	FM-75	FM-76	FM-77	FM-78	FM-79	FM-80
16 1/4"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-81-F	FM-82-F	FM-83-F	FM-84-F	FM-85-F	FM-86-F	FM-87-F	FM-88-F	FM-89-F	FM-90-F	FM-81	FM-82	FM-83	FM-84	FM-85	FM-86	FM-87	FM-88	FM-89	FM-90
19 1/4"	30"	30"	30"	30"	30"	30"	30"	30"	30"	28"	28"	28"	28"	28"	28"	28"	28"	28"	28"
FM-91-F	FM-92-F	FM-93-F	FM-94-F	FM-95-F	FM-96-F	FM-97-F	FM-98-F	FM-99-F	FM-100-F	FM-91	FM-92	FM-93	FM-94	FM-95	FM-96	FM-97	FM-98	FM-99	FM-100

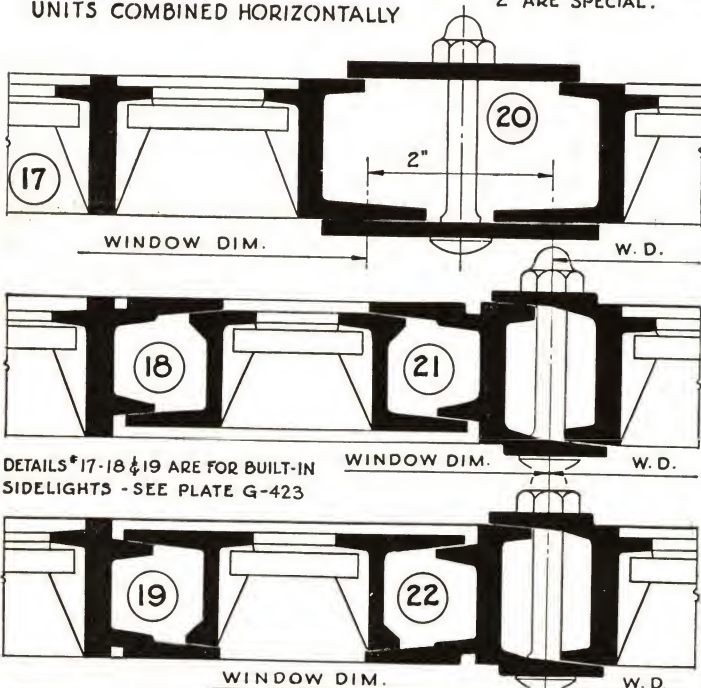
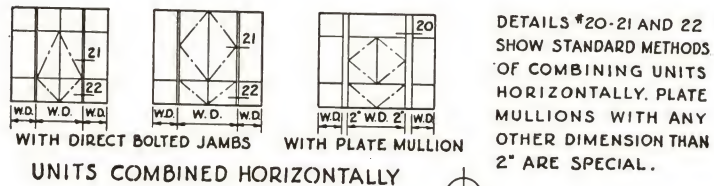
GLASS SIZES SHOWN FOR TYPES IN GROUP AT LEFT APPLY AS WELL TO TYPES IN GROUPS ABOVE. FIXED & VENT GLASS SIZES APPLY AS PER TYPE DESIGN.



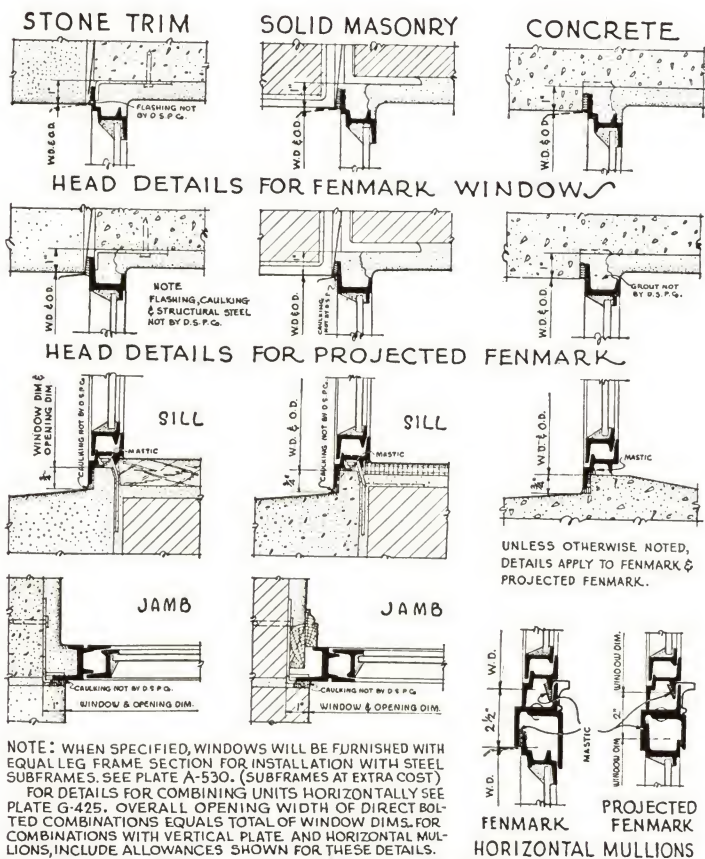
FENMARK & PROJECTED FENMARK G-423



FENMARK & PROJECTED FENMARK G-424



FENMARK & PROJECTED FENMARK G-425



FENMARK & PROJECTED FENMARK G-422

DALMO-FENMARK WINDOWS



Dalmo-Fenmark Window

All General Specifications on Pages 10, 11 and 12 apply except Section 2.

Standard Projected Fenmark Windows with Dalmo operating mechanism are designed for 100% ventilation in schools, hospitals, and office type structures where unusual speed, ease and flexibility in opening and closing are essential.

All vents open simultaneously by opening the sill ventilator. The latter may then be closed leaving upper vents open. By reopening the sill vent all vents are automatically reconnected and may be closed by closing the sill vent. No clutch or lever mechanism necessary. No pressed metal, built-up or factory sections used anywhere. See Section 1 General Specifications.

The Dalmo Fenmark is the only window on the market in which ventilators may be operated in unison by means of a mechanism entirely concealed.

Spring steel side arms supporting the upper vents are carried through the frame sections and pivoted into solid steel, welded, extension brackets, protrude only $3\frac{1}{8}$ in. inside the window and concealed by steel housings. Side arms on sill vents are pivoted to the frame.

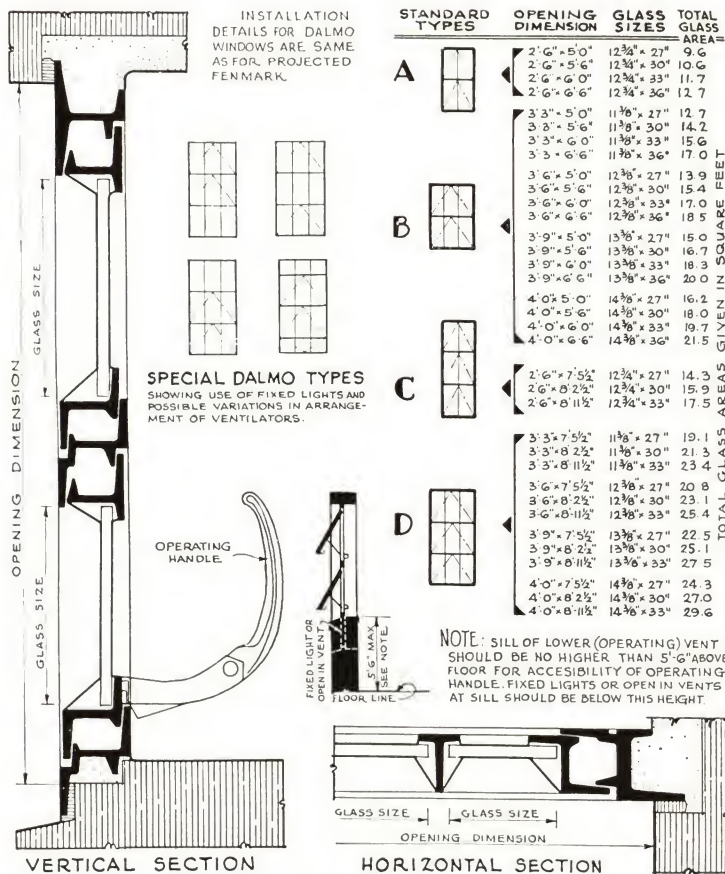
Ventilators are hung on U-shaped, vertically sliding shoes and are connected by concealed connecting bars. A solid bronze trip mechanism is located on each jamb bar to automatically release the lower ventilator after all vents have been opened.

All ventilators are locked in a closed position by a bronze locking handle at the sill of the lower vent.

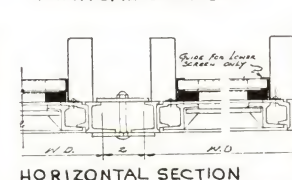
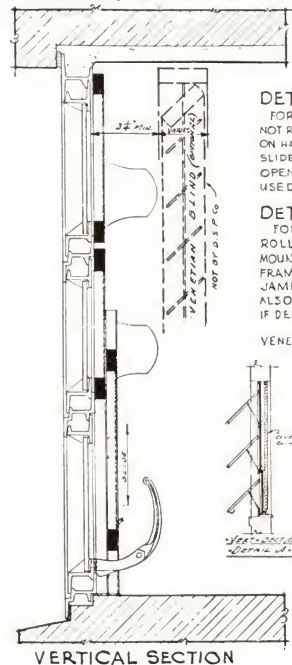
Each vent may be shaded on its under side to act as an awning. Metal shade guides for attachment at the ventilator jambs are available at extra cost. Vents are punched and shade brackets and cord rollers are included.

Available at extra cost where specified, are screw type adjusters with bead chain control for individual operation of units out of reach of floor; or concealed worm and gear operators providing crank or chain operation for multiple window bays or for units with sills out of reach or with sills so near floor that normal operation is inconvenient.

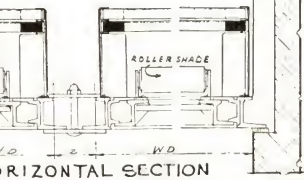
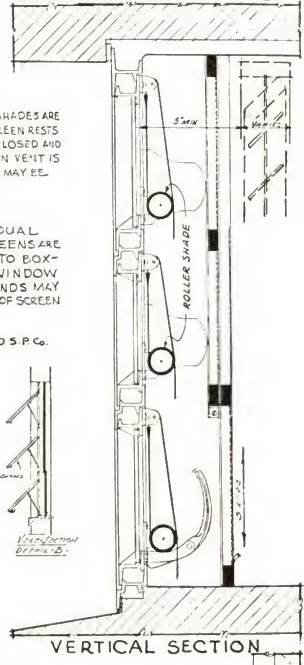
Consult your nearest Fenestra representative for details.



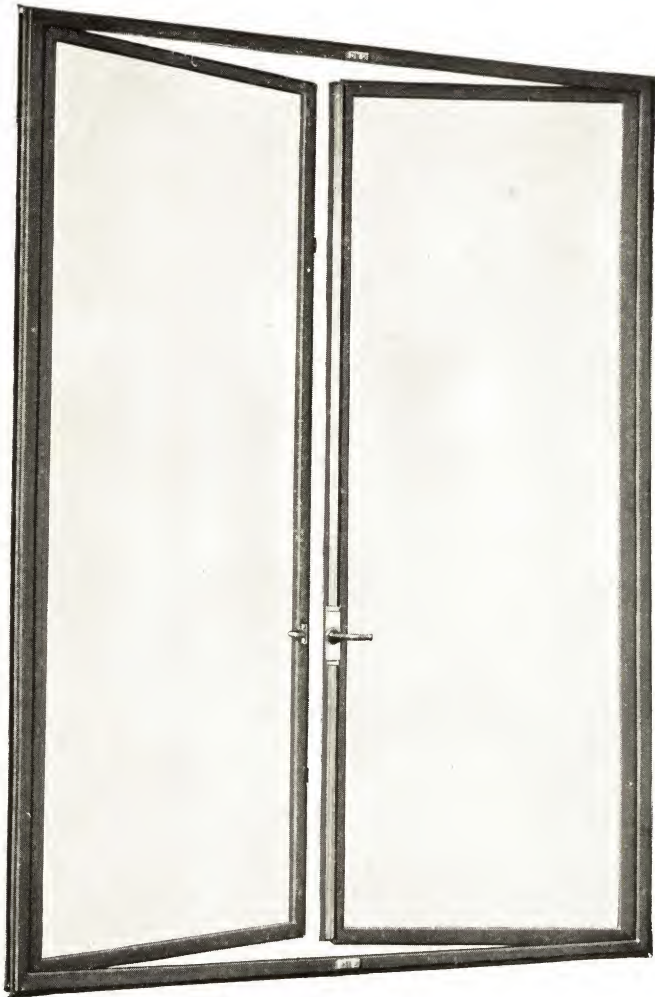
SCREEN DETAIL - A -



SCREEN DETAIL - B -



CUSTOM CASEMENTS



Custom Casement, Folder Type, With Bronze Cremone Bolt.

All General Specifications on Pages 10, 11 and 12 apply except Section 5.

Fenestra Custom Casements are heavy, solid section, steel windows designed for use in monumental, public and educational buildings and in fine residences, clubs, theaters, hospitals and so on. They are especially desirable where large sized units are required as the unusual weight of the sections permits single units, 100% ventilated, up to 3 ft. wide by 8 ft. high and double ventilated, "folder type" units (without meeting rail) up to 5 ft. wide by 8 ft. high.

Frame and ventilator sections are $1\frac{3}{4}$ in. deep from front to back. Frame sections have equal legs. Frame and ventilator corners are mitered and electrically butt welded.

(Frame sections equipped with continuous steel fins for anchorage, at extra cost where specified.)

Made in both Screen and Standard Types but Screen Types must be made with meeting rail. Folder types non-screened or equipped with sliding, rolling or hinged screens.

Side hung ventilators usually are designed to open out but may be designed to open in if so specified.

Transom types with ventilators projected, top-hinged to open out or bottom hinged to open in, are available—also bottom hinged, open-in, sill ventilators. Transoms and sill ventilators may be combined with side hung units by means of transom bars to provide windows of almost any height or width or degree of ventilation, up to 100%.

Large panes of glass, one to each leaf, usually are used with putty and spring glazing clips. Muntins can be supplied where specified.

Specification bronze hardware, coinage finish, always is supplied unless otherwise specified. Screen type hardware includes: Handles 1222 or 1023, Roto-Adjuster 356 with Handles 355 or 354. (Adjuster 396 and Handle 397 for swing leaves over 2 ft. 0 in. wide.) Single leaf Standard types have Handle 1119 with friction butts. Double leaf Standard types have Cremone Bolt 1294 with Handle 1293 and Finger Pull 1130. Transom Adjusters include: 1101, 1110, 1108.

(Extra heavy Roto-Adjuster on Screen types or concealed Friction Adjuster 1168 on Standard types can be supplied at extra cost with non-friction butts.)

(For single ventilators over 5 ft. high or with vertical centers more than 6 ft. 3 in. above the floor, Double Locking Devices 1180 and 1181 are recommended.)

"Inside Insulating Window" available for Screen Types if desired.

Hardware for Custom Windows

1119
OPEN OUT

1222

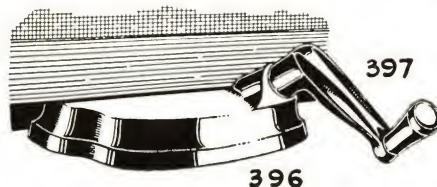


1168



356

355



396

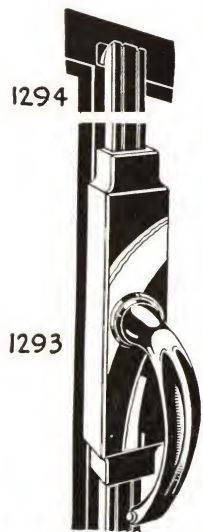
397



1181



1180



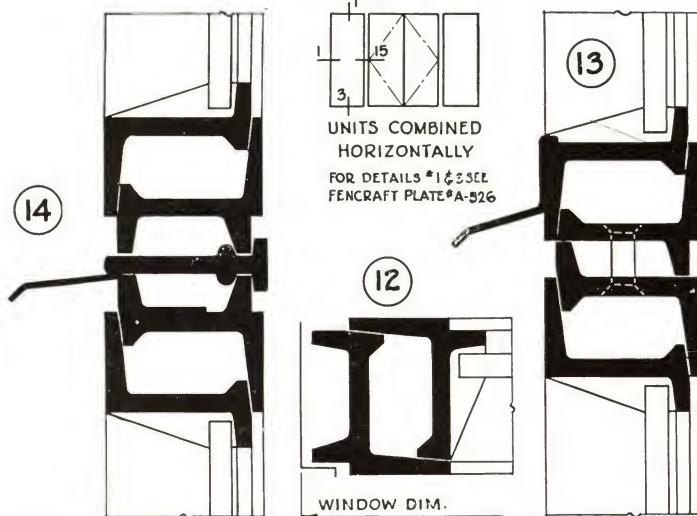
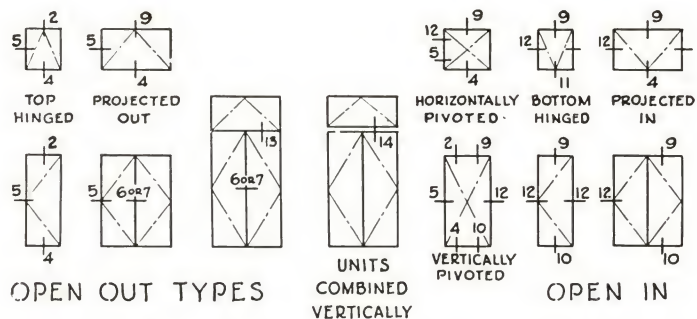
1294

1293



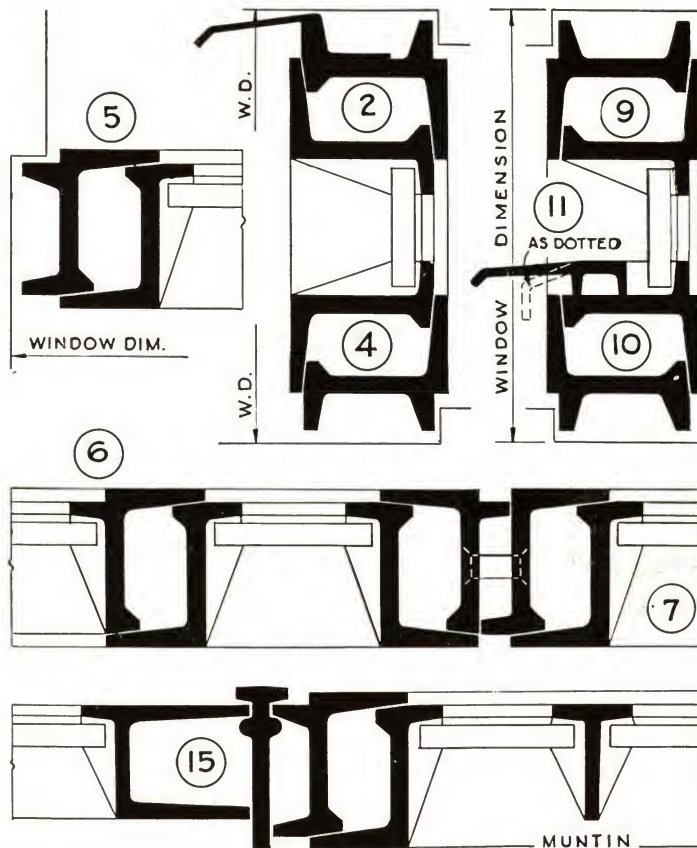
1130

1119
OPEN IN



CUSTOM BUILT CASEMENTS

E-102



CUSTOM BUILT CASEMENTS

E-101

CASEMENT DOORS



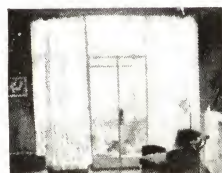
Fenestra Casement Doors and Frames are supplied in standard sizes as assembled units for use either individually or in combination with Fencraft or Fenwrought side lights and transoms.

Both doors and frames are made from 1 1/4 in., cold rolled, solid steel sections with corners mitered, electrically welded and ground smooth. Lower portion of the door is a 16-gauge, double kick plate with Celotex sound deadener. Upper portion is of interlocked steel sections accommodating plate glass inserted from the outside. Doors are already fitted and hung in the frames on close-in, friction butts. Extruded bronze thresholds are available at extra cost.

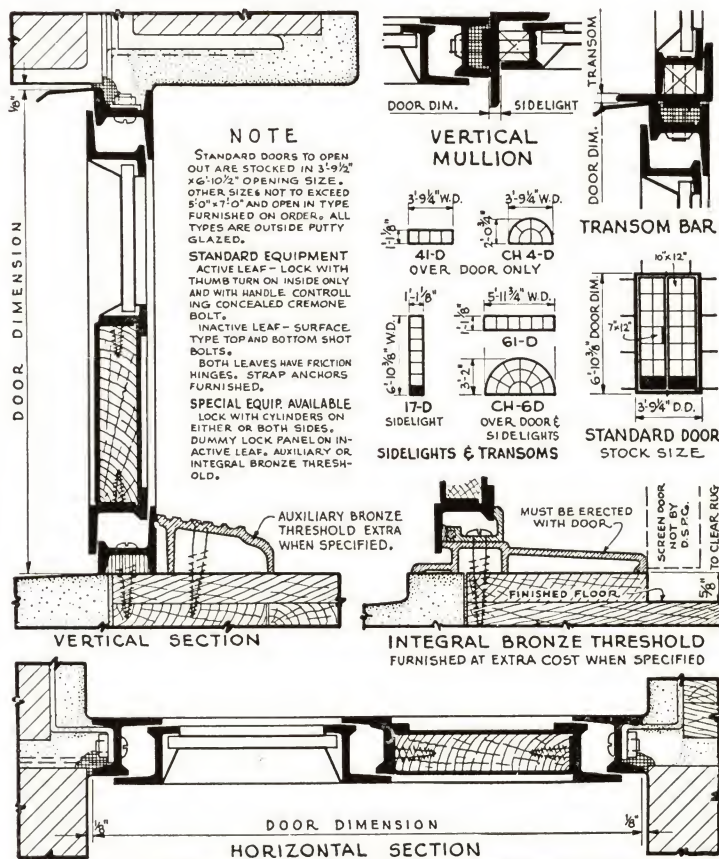
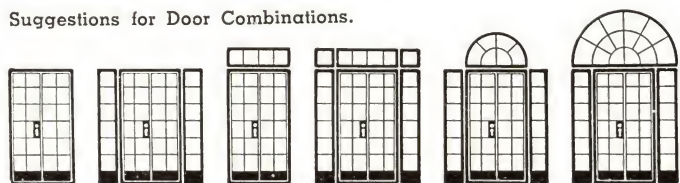
Specification bronze hardware is standard. Handles (1176-A) on both sides of the active leaf actuate a concealed, bronze, cremone bolt. A bronze thumb turn is supplied on the inside. Bronze top and bottom shot bolts (1459) are supplied on the inactive leaf.

These doors are not recommended for outside entrances or heavy traffic locations. Screen doors are not supplied.

Custom Doors of heavy 1 $\frac{9}{16}$ in. section are available where specified.



Suggestions for Door Combinations.



CASEMENT DOOR DETAILS

B 304

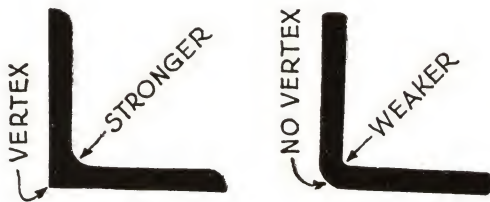
PIVOTED AND PROJECTED WINDOWS

GENERAL SPECIFICATIONS

1—SECTIONS

Sections are of American rolled, dead soft, open hearth steel, $1\frac{3}{8}$ in. from front to back, with a "Vertex" at each angle.

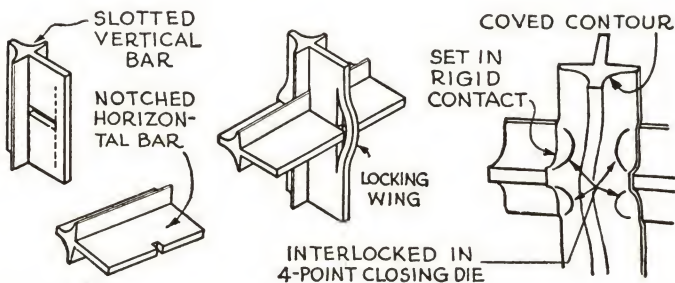
(Dead soft steel fabricates easily. Hard steel tends to fracture in fabrication.)



(A "vertex" angle is one in which the sides of the angle are rolled out full to the point of intersection. Such an angle has greater thickness than a pressed steel angle which has no vertex. Hence it has greater strength at the corner where strength is needed.)

2—THE FENESTRA JOINT

The frames and the ventilators are mortised and tenoned and air hammer riveted at all corners. Muntin bars are continuous from head to sill and from jamb to jamb, a construction made possible by the Fenestra Joint, which is the strongest known means of interlocking vertical and horizontal bars.



(To form the Fenestra Joint, the vertical bar is slotted and spread. Then the notched horizontal bar is threaded through the vertical. Both bars are tightly interlocked in a four-point closing die which clamps them into rigid-weather-tight contact that makes welding unnecessary.)

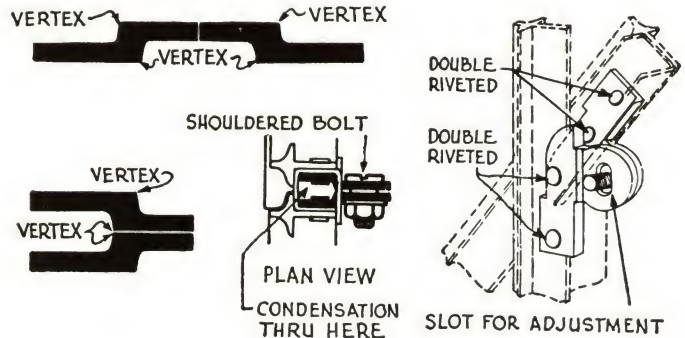
3—THE BUTTS

All ventilators are pivoted horizontally and supported on external, adjustable butts of solid rolled steel, double riveted through both the window bars and the weathering.

(All butts are of "vertex" section to give maximum strength in supporting the ventilator. They are located 2 in. above the ventilator centerline unless otherwise specified, but may be set 4 in. below the top of the ventilator if desired.)

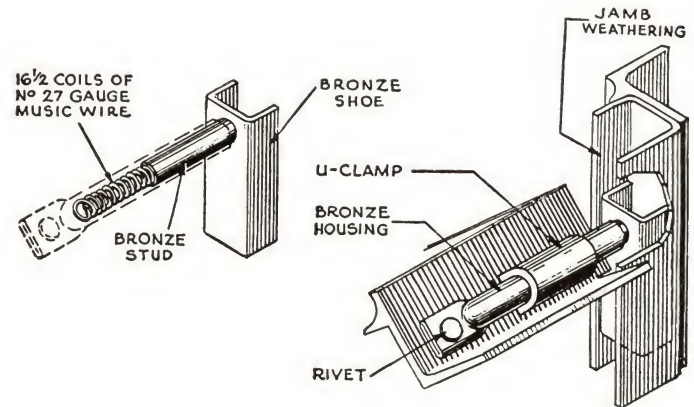
Each butt is cut and formed to permit the free passage of condensation from above the butt and guide it down to an exit at the ventilator sill. The "ears" of each butt protrude on the inside

of the window so as to be easily accessible and the sash member of the butt is slotted to permit adjustment up or down as necessary. Butt pins are $\frac{3}{8}$ in. solid steel and are "shouldered" so that the ventilators, turning on these shoulders, never bind no matter how tightly the nut on the butt pin is screwed down.



4—SLIDING SHOES

Projected Ventilators are supported on heavy, bronze pivoted, spring steel side arms and are equipped with bronze sliding, friction



shoes (two per vent), the friction being maintained by compression springs of heavy, rust-proofed music wire, completely enclosed in bronze housings.

(Projected-In Ventilators used at the sills of windows tilt in at the top while sliding up from the bottom. Projected Ventilators used above the sill usually swing out at the bottom while sliding down from the top, but may tilt in from the top if so specified.)

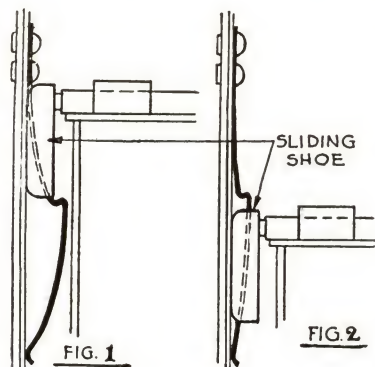
5—ALIGNMENT STOPS

Each Projected-Out Ventilator is equipped with two alignment control bronze springs riveted in the jamb channels to limit the downward travel of the friction shoes and stop all ventilators in open alignment at about 60 degrees, but pressure on these springs permits the shoes to slide past so that the ventilators may be opened further.

Each Projected-In Ventilator has a solid steel stop to limit its opening to about 90 degrees.

STEEL ALIGNMENT SPRING FOR OPEN OUT VENTS.

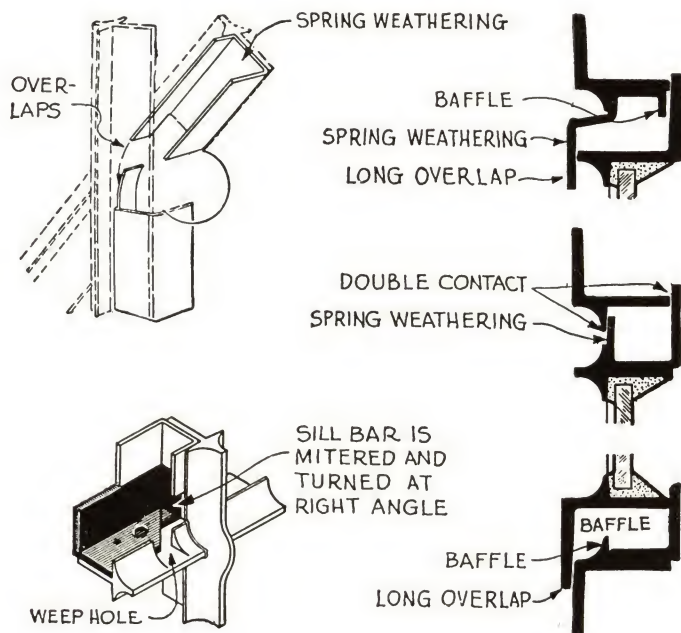
IN FIG. 1-ALIGNMENT SPRING HAS STOPPED DOWNWARD TRAVEL OF SHOE. IN FIG. 2-SPRING, COMPRESSED BY THUMB, ALLOWS SHOE TO SLIDE PAST.



6-WEATHERING

All Pivoted and Projected Windows have continuous, two-point flat contact weathering between sash and frame all around the opening.

At the head, a long, down-standing leg on the outside and an air-deflecting baffle on the inside form an effective weather-guard. Weathering at the jambs is a U-shaped channel with no "vertex" in order to insure springiness. At the butt, the weathering is so cut that the weather member on the ventilator overlaps the weathering on the frame as the window closes, forming complete protection. At the sill, the weathering is mitered and turned at right angles so that condensation is guided away from the inside of the window toward nearby "weep-holes" which carry it to the outside.



7-HARDWARE

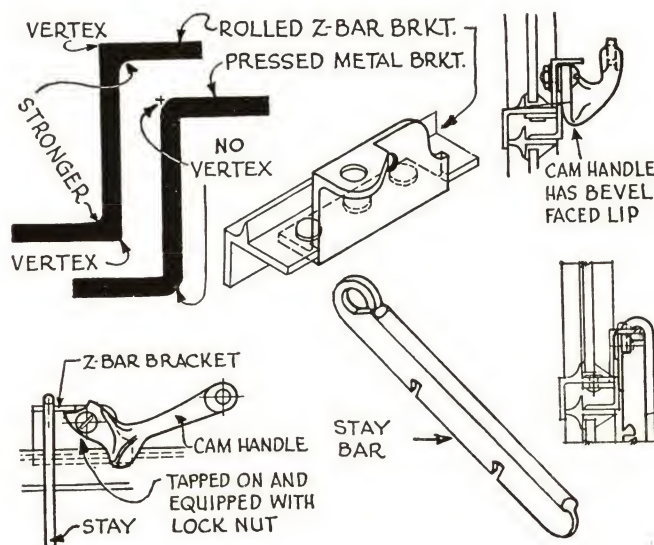
A solid steel, Z-bar bracket, rolled of "vertex" section, is supplied—triple riveted to the sill bar of the ventilator—the strongest known means of attaching hardware.

Horizontally Pivoted Hardware

Horizontally Pivoted Ventilators may be operated in any one of five different ways.

1. Cam Handle and Stay Bar attached to the Z-bar bracket.
2. Cam handle and Chain attached to the Z-bar bracket.

3. Spring Catch and Chain attached to the Z-bar bracket.
4. Spring Catch and Chain attached at the head.
5. Mechanical Operator.



The Cam Handle is cast with a bevel faced lip and a weighted handle. It is tapped to the Z-bar bracket and is further held by a locking nut. As the ventilator closes the handle rides up and drops over the edge of the weathering, forming an automatic latch. Light downward pressure on the handle locks the vent and pulls the springy weathering at the jambs into tight contact with the frame.

Spring catches and pulley bracket are of steel. Chain is galvanized. Sufficient chain is provided to extend downward to within easy reach from the floor. Chain cleats are supplied to hold the ventilators in an open position.

Commercial Projected Hardware

Hardware for Commercial Projected Open-Out Ventilators includes a weighted cam handle attached to the Z-bar bracket at the sill and a pole ring at the head of the ventilator. (Stay Bars are not necessary. Chain operation cannot be supplied.)

Hardware for Commercial Projected Open-In Ventilators consists of a cam handle at the head for band operation. If the ventilator is out of reach from the floor a spring catch or handle with eye for pole operation is supplied (or a spring catch and chain for chain operation).

8-ERECTION

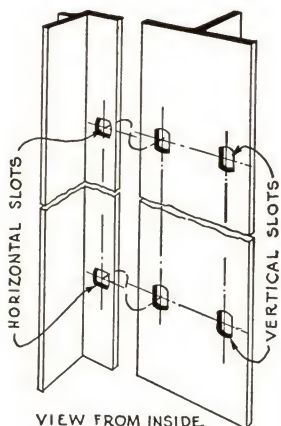
All windows should be erected in prepared openings, set plumb and true, properly aligned and securely anchored before glazing.

In all multiple unit openings where the vertical mullions are not anchored to the sills—and in all cases where any ventilator comes to the sill of the windows—and in all cases where the window is more than 5 ft. 0 in. wide, standard Fenestra sill anchors should be used, two anchors for windows up to 6 ft. 6 in. wide and four anchors for windows wider than 6 ft. 6 in.

(Mortar grouting, pointing, etc., should be included in the masonry specifications to be done by the mason contractor.)

The Fenestra Construction Co., a subsidiary of the DETROIT STEEL PRODUCTS CO., is prepared to erect Fenestra Windows, glaze and paint them, where desired; the work being done under a separate contract.

9—MULLIONS



Two or more windows may be used side by side in the same opening when joined by the Fenestra Vertical Mullion. This is a "T" section. The web of the T usually is turned out and the wings of the T are lapped over and bolted to the frame members of the adjoining windows.

Vertical slots in the wings of the mullion correspond to horizontal slots in the window jamb bars and permit both vertical and horizontal adjustment to meet erection condition as the bolts are inserted.

Two or more windows, may be used one above another in the same opening when joined by structural horizontal mullions (transom bars), which vary in construction depending on the width of the opening. See Page 29.

10—GLAZING

Glass for standard types of Horizontally Pivoted and Commercial Projected windows is cut in lights 12 x 18 in. or 14 x 20 in. but ventilator lights which abut on the top, sides or bottom of the ventilator must be trimmed 1 in. along the abutting edge. One-quarter inch glass is preferable, either rough wire or factory ribbed. One-eighth inch factory ribbed, or double strength glass may be used.

Putty must be high grade, steel window putty. Ordinary wood sash putty cannot be used.



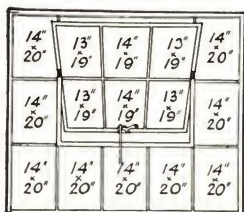
Bed Puttying.



Glazing Clip in place.



Inserting Glazing Clips.



Ventilator lights which abut on top, sides or bottom of ventilator trim 1" on the abutting edge.

All Pivoted and Projected Windows are glazed from the inside, glass being set in a bed of putty and secured by copper plated, spring glazing clips supplied by the window manufacturer. Four clips should be used for each fixed light and six clips for each ventilator light. After the clips are inserted, face putty should be applied.

11—PAINTING

All windows are given one dip coat of red mineral paint before shipment. Further painting should be done by the painting contractor in the field. One field coat is desirable after erection and before glazing and a finish coat should be applied about three weeks after glazing, when the putty has had time to set.

12—BONDERIZING

At slight extra cost, Pivoted and Projected Windows can be supplied with a new finish which includes Bonderizing, painting, and oven baking. This process, never before applied to steel windows on a production basis, gives the steel sections a phosphated, crystalline surface structure which is rust-resisting; guards against flaking, chalking, peeling, and abrasion and makes the priming coat last three to five times longer.

The Bonderizing process is largely responsible for the fine finishes on automobile fenders and refrigerators and when applied to steel windows, provides a tough, durable base coat that improves the appearance and lasting qualities of all finish coats which may be applied later.

13—UNDERWRITERS' LABEL

Underwriters' Labels can be supplied on both Horizontally Pivoted and Commercial Projected Windows.

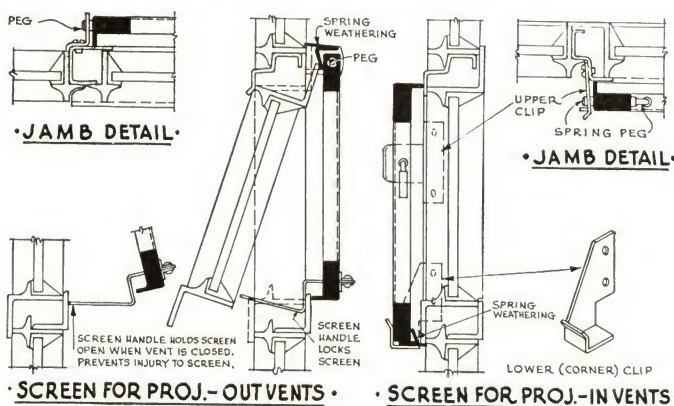
Windows must not be more than 7 x 12 ft. overall. (Either dimension may be used for width or height.) The total area per ventilator must not be more than 3,000 sq. in. and ventilators must be operated individually. Glass must be 1/4 in. wire, and single light dimensions are limited to 48 in. in either width or height with an exposed area of not over 350 sq. in. Glass must be held in place by glazing angles.

14—SCREENING

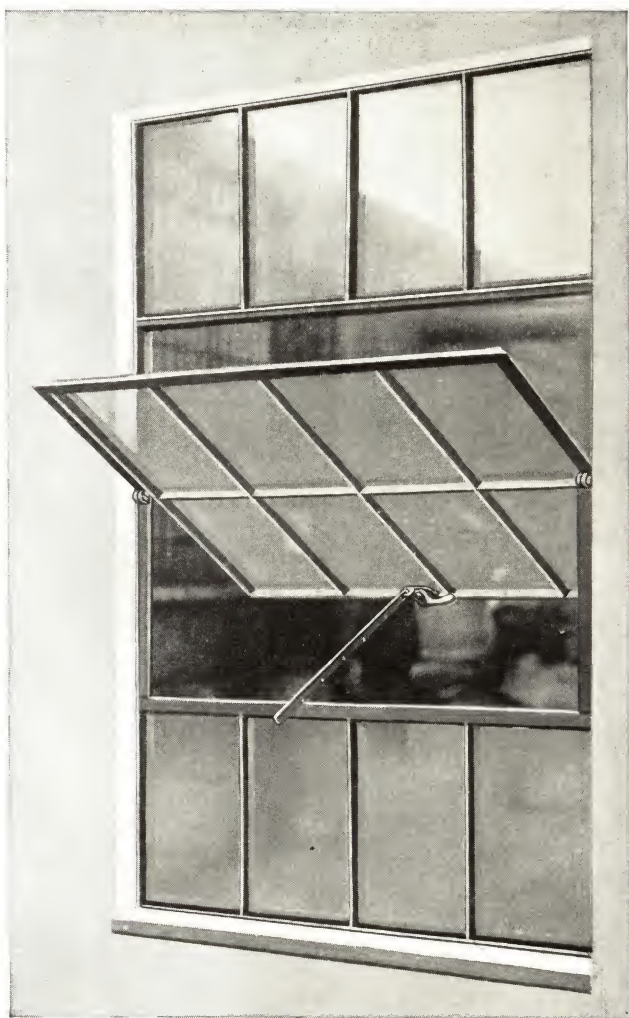
Metal screens can be supplied for both Pivoted and Projected Types.

For Horizontally Pivoted Ventilators the screens are so arranged that the upper half of the screen is outside the ventilator and the lower half is inside.

Where screens are an important item, we suggest the use of Commercial Projected Windows with open-in ventilators and screens on the outside. If specified, Projected-Out Ventilators may be used with screens on the inside. (See details below.)



HORIZONTALLY PIVOTED WINDOWS



Horizontally Pivoted Window. Type 44181.

All sections of the General Specifications, Pages 24 to 26 apply except Sections 4 and 5.

Fenestra Horizontally Pivoted Windows have been standard material in all types of industrial and commercial construction for years. Their use is general all over the United States in such buildings as factories, warehouses, mills, power plants, lofts, garages, piers, round houses, hangars, and shops.

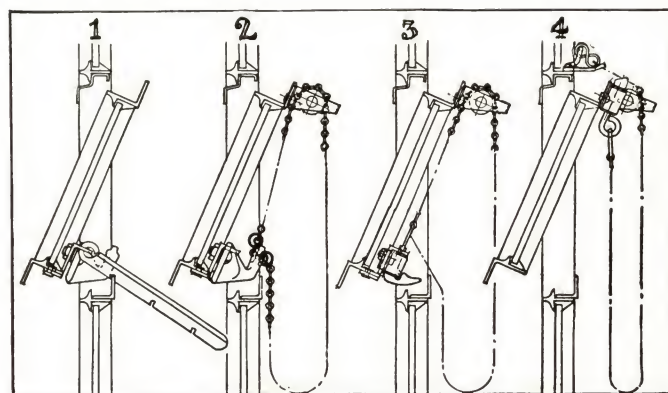
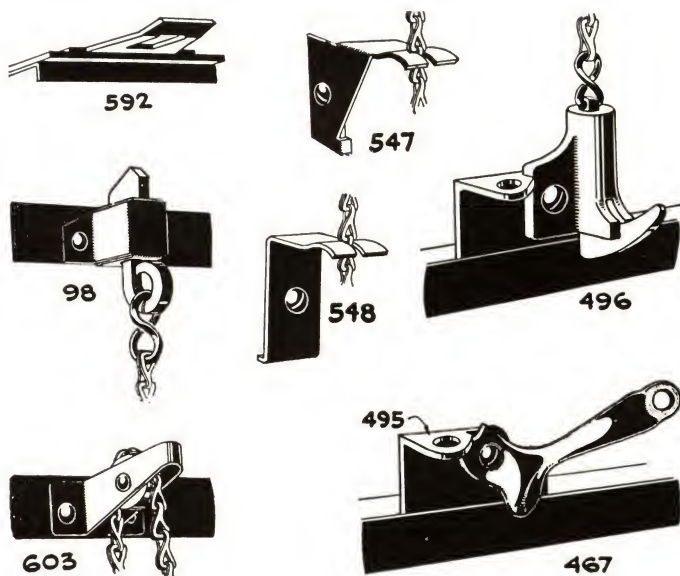
Frame members are solid rolled, vertex profile steel sections with corners mortised and tenoned and air-hammer riveted. Ventilators are symmetrically located and are pivoted horizontally. (Section 3, General Specifications.) In an open position, the upper portion of the ventilator is inside the building and the lower portion is outside.

Ventilators may be operated by hand, individually, using any of the four methods shown below. No. 1 is Z-Bar Bracket 495; Cam Handle 467; Stay 860. No. 2 is Z-Bar Bracket 495; Cam Handle 467; Chain passing up over Roller Bracket 603. No. 3 is Z-Bar Bracket 495; Spring Catch 496; Chain passing up over Roller Bracket 603. No. 4 is Spring Catch 98 with Keeper 592. Chain Cleats 547 or 548 are supplied as necessary. Ventilators also may be operated in banks by mechanical operators.

Although Horizontally Pivoted Windows may be screened, where screening is a major factor, we recommend the use of Commercial Projected Types in the same sizes. (See Page 26.)

Stock, Standard and Listed Special Types of Pivoted Windows are shown on Page 28, combinations of units to fill multiple openings on Page 29 and installation details on Page 32.

Bonderized at extra cost where specified.

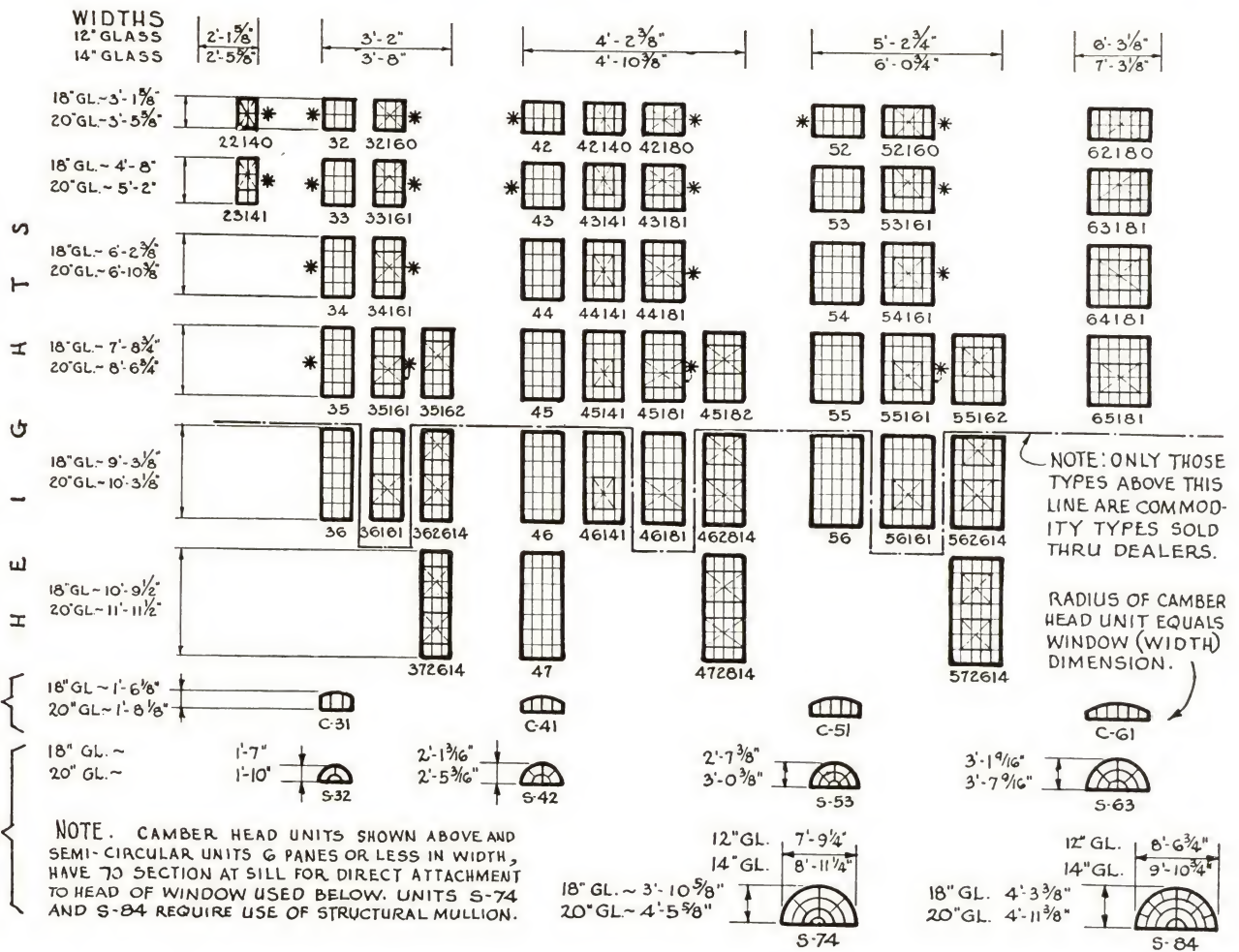


STANDARD AND STOCK TYPES

* TYPES STARRED ARE STOCKED IN ALLWAREHOUSES. FOR TYPES NOT STARRED BARS ONLY ARE STOCKED AT FACTORY FOR ASSEMBLY AS REQ'D.

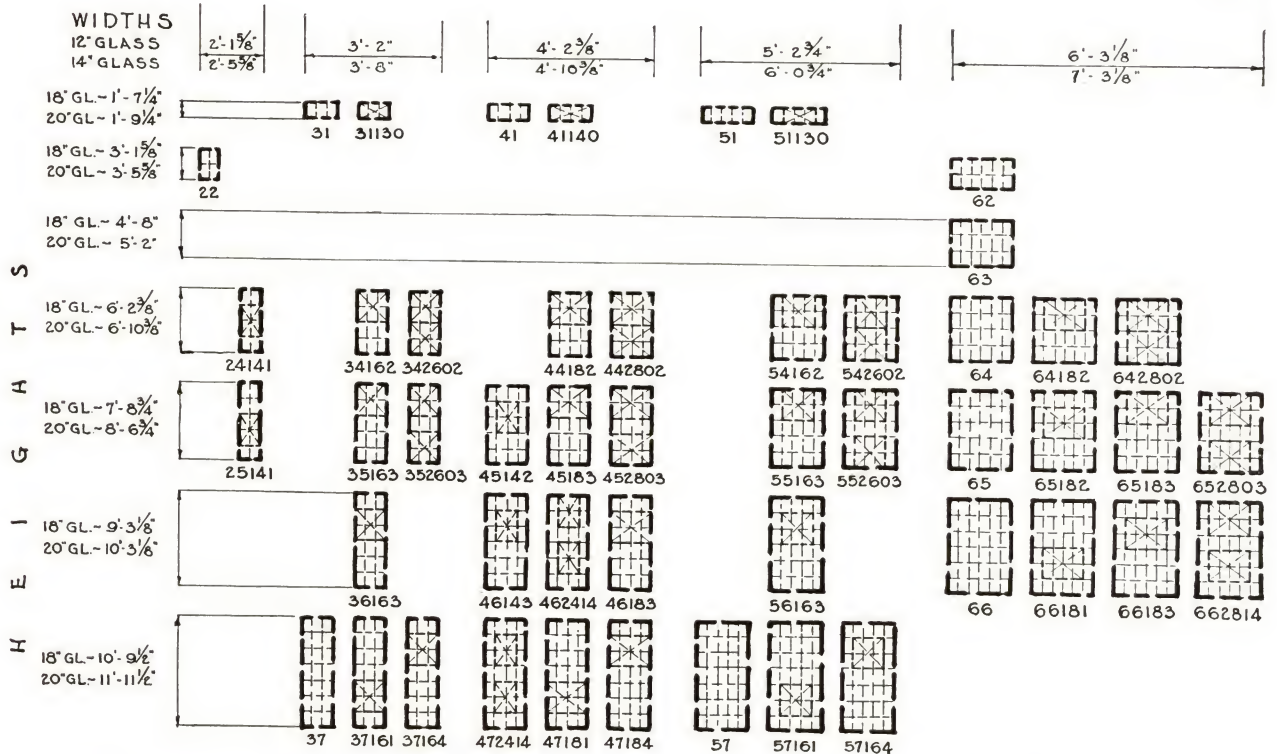
CAMBER HEADS

SEMI-CIRCULAR UNITS



LISTED SPECIAL TYPES

GLASS SIZE COMBINATIONS ARE 12" x 18" AND 14" x 20"
LISTED SPECIAL UNITS ARE BUILT AT THE FACTORY AS REQ'D.

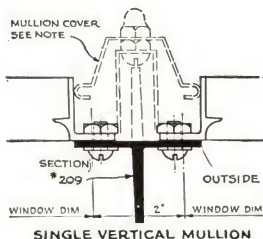


PIVOTED TYPES AND SIZES

L-116

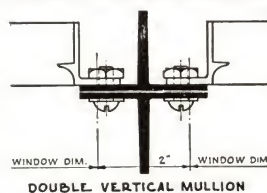
SYMMETRICAL COMBINATIONS OF UNITS

12" x 18" Glass	14" x 20" Glass	Type and Arrangement of Units	Total Lights	No. Units	No. of VERT. MULLS.
SINGLE WINDOW WIDTHS			Wide	Wide	
1' 1 1/4"	1' 3 1/4"		1	1	0
2' 1 5/8"	2' 5 5/8"		2	1	0
3' 2"	3' 8"		3	1	0
4' 2 3/8"	4' 10 3/8"		4	1	0
5' 2 3/4"	6' 0 3/4"		5	1	0
6' 3 1/8"	7' 3 1/8"		6	1	0
MULTIPLE WINDOW WIDTHS					
4' 5 1/4"	5' 1 1/4"	2-2	4	2	1
6' 6"	7' 6"	3-3	6	2	1
8' 6 3/4"	9' 10 3/4"	4-4	8	2	1
9' 10"	11' 4"	3-3-3	9	3	2
10' 7 1/2"	12' 3 1/2"	5-5	10	2	1
10' 10 3/8"	12' 6 3/8"	3-4-3	10	3	2
11' 10 3/4"	13' 8 3/4"	3-5-3	11	3	2
12' 8 1/4"	14' 8 1/4"	6-6	12	2	1
12' 11 1/8"	14' 11 1/8"	4-4-4	12	3	2
13' 2"	15' 2"	3-3-3-3	12	4	3
13' 11 1/2"	16' 1 1/2"	4-5-4	13	3	2
14' 11 7/8"	17' 3 7/8"	5-4-5	14	3	2
15' 2 3/4"	17' 6 3/4"	3-4-4-3	14	4	3
16' 0 1/4"	18' 6 1/4"	5-5-5	15	3	2
16' 6"	19' 0"	3-3-3-3-3	15	5	4
17' 0 5/8"	19' 8 5/8"	5-6-5	16	3	2
17' 3 1/2"	19' 11 1/2"	4-4-4-4	16	4	3
17' 6 3/8"	20' 2 3/8"	3-3-4-3-3	16	5	4
18' 1"	20' 11"	6-5-6	17	3	2
18' 6 3/4"	21' 4 3/4"	3-4-3-4-3	17	5	4
19' 1 3/8"	22' 1 3/8"	6-6-6	18	3	2
19' 4 1/4"	22' 4 1/4"	4-5-5-4	18	4	3
19' 7 1/8"	22' 7 1/8"	3-4-4-4-3	18	5	4
20' 7 1/2"	23' 9 1/2"	4-4-3-4-4	19	5	4
21' 5"	24' 9"	5-5-5-5	20	4	3
21' 7 7/8"	24' 11 7/8"	4-4-4-4-4	20	5	4
21' 10 3/4"	25' 2 3/4"	3-3-4-4-3-3	20	6	5
22' 8 1/4"	26' 2 1/4"	3-5-5-5-3	21	5	4
23' 2"	26' 8"	3-3-3-3-3-3-3	21	7	6
23' 8 5/8"	27' 4 5/8"	5-4-4-4-5	22	5	4
23' 11 1/2"	27' 7 1/2"	3-4-4-4-4-3	22	6	5
24' 2 3/8"	27' 10 3/8"	3-3-3-4-3-3-3	22	7	6
24' 9"	28' 7"	4-5-5-5-4	23	5	4
25' 2 3/4"	29' 0 3/4"	4-3-3-3-3-3-4	23	7	6
25' 9 3/8"	29' 9 3/8"	5-5-4-5-5	24	5	4
26' 0 1/4"	30' 0 1/4"	4-4-4-4-4-4	24	6	5
26' 9 3/4"	30' 11 3/4"	5-5-5-5-5	25	5	4
27' 3 1/2"	31' 5 1/2"	4-4-3-3-3-4-4	25	7	6
27' 10 1/8"	32' 2 1/8"	5-5-6-5-5	26	5	4
28' 1"	32' 5"	5-4-4-4-4-5	26	6	5
28' 10 1/2"	33' 4 1/2"	6-5-5-5-6	27	5	4
29' 10 7/8"	34' 6 7/8"	5-6-6-6-5	28	5	4
30' 1 3/4"	34' 9 3/4"	4-5-5-5-5-4	28	6	5
30' 11 1/4"	35' 9 1/4"	6-6-5-6-6	29	5	4
31' 1 1/8"	36' 1 1/8"	6-6-6-6-6	30	5	4
32' 2 1/2"	37' 2 1/2"	5-5-5-5-5-5	30	6	5
33' 5 3/4"	38' 7 3/4"	4-4-5-5-5-4-4	31	7	6
34' 3 1/4"	39' 7 1/4"	4-6-6-6-6-4	32	6	5
35' 6 1/2"	41' 0 1/2"	4-5-5-5-5-5-4	33	7	6



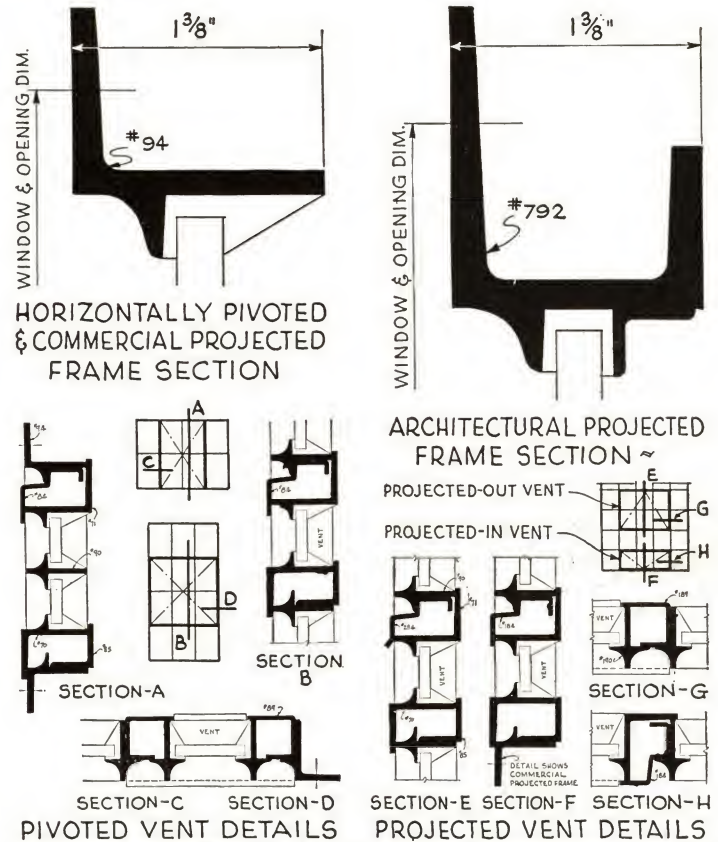
NOTE: ONLY MULLIONS OF DESIGN SHOWN ARE FURNISHED BY D.S.P. CO. STEEL MULLION COVER FURNISHED AT EXTRA COST WHEN SPECIFIED.

WINDOW WIDTHS IN TABLE ARE OVER-ALL OPENING AND WINDOW DIMENSIONS INCLUDING MULLIONS. ALWAYS COMBINE UNITS OF THE SAME GLASS SIZES.

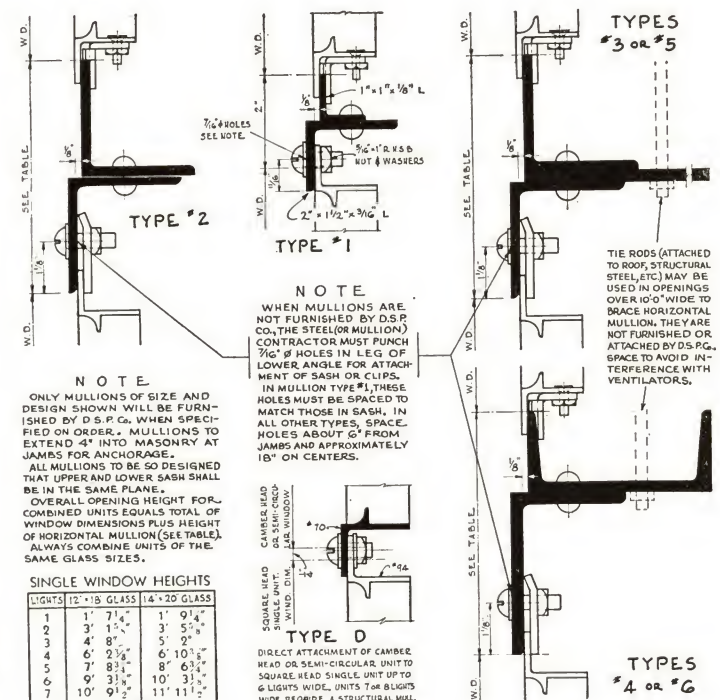


VERTICAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED)

L-126



STANDARD SECTIONS ~ HORIZONTALLY PIVOTED, COMMERCIAL PROJECTED & ARCHITECTURAL PROJECTED M-108



Lights Wide	Mullion Type	Steel Angles		Steel Plate	Structural Channel	Weight per Foot of Mullion	Between Wind. Dims.
		Read	Size				
12 x 18 glass	14 x 20 glass						
Single Units 6 lights or less	No. 1	2	see detail	none	none	3.0 lbs.	2'
3 to 9	No. 2	2	2 1/2" x 2 1/2" x 3/4"	none	none	6.5 lbs.	5'
10 to 13	No. 3	4	2 1/2" x 2 1/2" x 3/4"	6" x 3/4"	none	11.5 lbs.	3 1/4'
10 to 11	No. 4	1	3 1/2" x 2 1/2" x 3/4"	none	4"	10.3 lbs.	3 1/4'
14 to 18	No. 5	2	3" x 3" x 3/4"	6" x 3/4"	none	17.5 lbs.	6 1/4'
14 to 16	No. 6	1	4" x 3" x 3/4"	none	6"	15.5 lbs.	6 1/4'

HORIZONTAL MULLIONS (HORIZONTALLY PIVOTED COMMERCIAL PROJECTED)

L-127

COMMERCIAL PROJECTED WINDOWS

All sections of the General Specifications, Pages 24 to 26, apply except Section 3.

Commercial Projected Windows are designed for all types of industrial and commercial buildings, factory offices, and particularly for window openings where screening and shading are important factors.

Each ventilator opens entirely inside or entirely outside the plane of the window permitting easy attachment of screens, roller shades, wire guards, blinds, etc. Ventilators are supported on bronze pivoted, spring steel side arms and open in or out as specified.

Projected-In Types, with fixed screens attached on the outside, as shown in the lower right hand corner, usually answer all screening requirements.

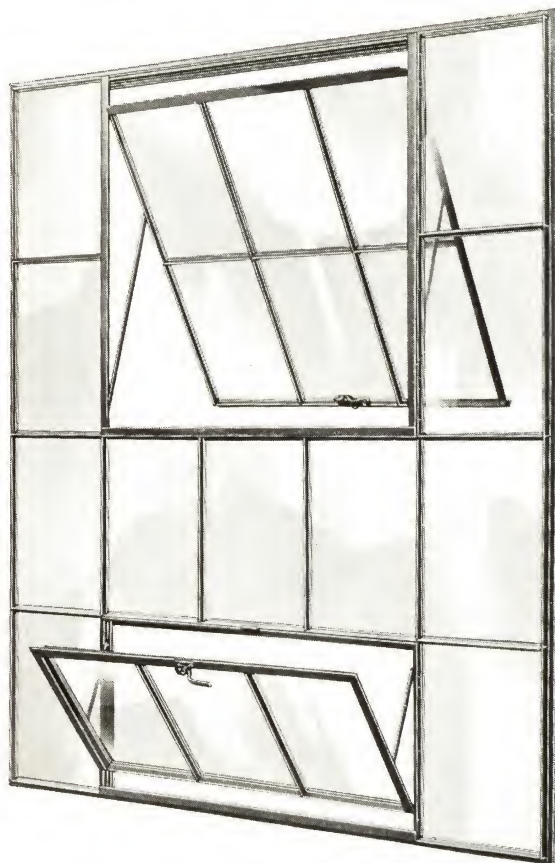
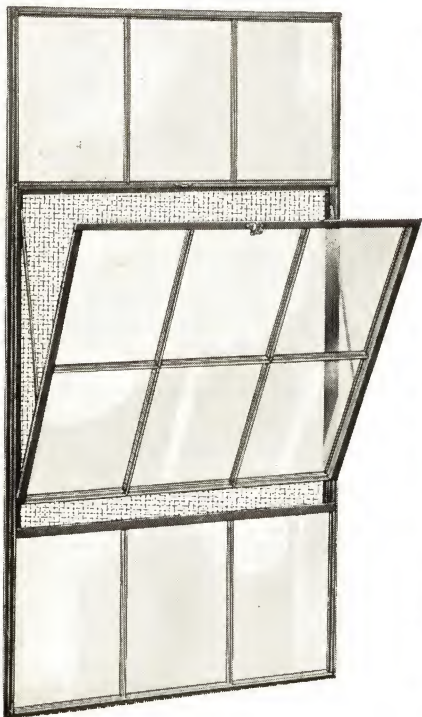
Standard types and sizes are shown on Page 32. For method of vent hanging, see Sections 4 and 5, General Specifications. Materials, construction and installation details are exactly the same as for Horizontally Pivoted Windows.

Hardware, as shown on Page 31, is standardized in iron (bronze at extra cost). Hardware for Open-Out Ventilators includes: Handle 150, Pole Ring 151. Hardware for Open-in Ventilators includes: Handles 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from inside, glass being bed puttied, held by spring glazing clips and face puttied.

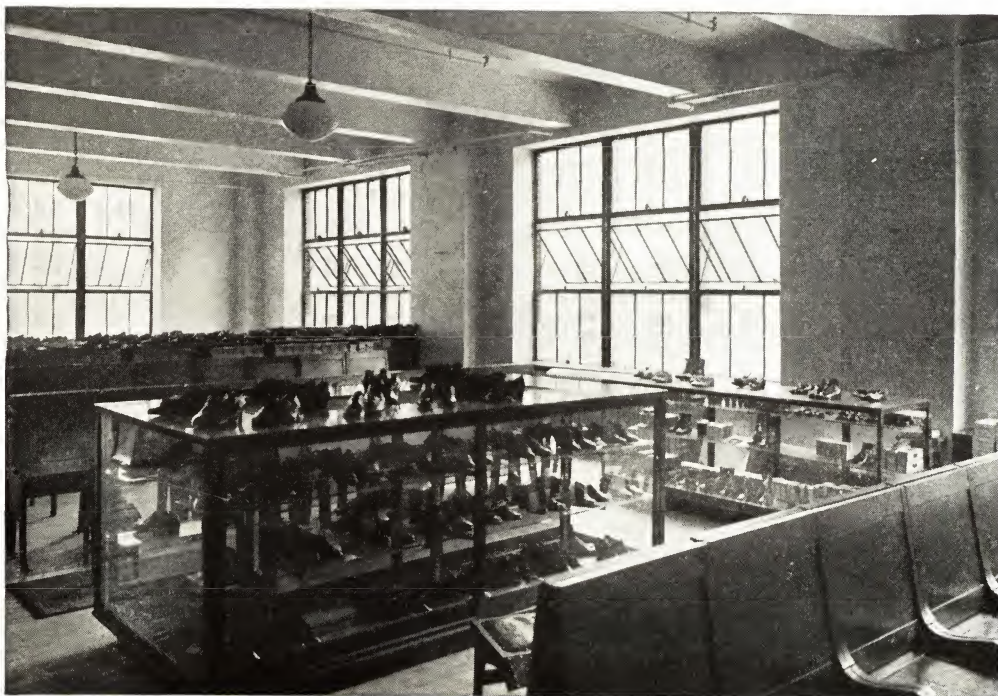
Projected-Out Vents form a protecting canopy above the window opening. May be opened in rainy weather. Also insure unobstructed aisle or storage space under the window. Projected-In Vents act as wind guards at the sill; deflect air currents upward and toward the opposite wall.

Below: Type 34161, with projected-in vent to facilitate screening on the outside.



Above: Type 5423602, with upper vent projected-out and lower vent projected-in.

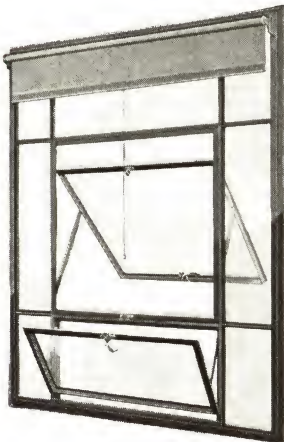
Below: Retail sales department of the Hens Kelly Shoe Co., Buffalo, N. Y. Fenestra Commercial Projected Windows.



ARCHITECTURAL PROJECTED WINDOWS

FRAME $1\frac{3}{8}$ IN. DEEP

Architectural Projected Windows are designed for use in office type buildings, schools and commercial structures of all types where the architectural effect desired is somewhat more elaborate than that supplied by either Horizontally Pivoted or Commercial Projected Windows.



Type 4056.

Standard Types are shown on Page 32 and include the use of comparatively large glass lights in the ventilators with narrow side lights and fixed transoms.

Architectural Projected Windows have frames of hot rolled, vertex profile steel channel section as indicated on Page 29.

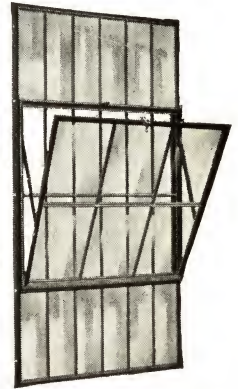
In other respects, General Specifications on Pages 24 to 26 apply except Sections 3 and 10.

Hardware as shown below, is standardized in bronze. Iron hardware is available where specified. Hardware for Open-Out Ventilators includes: Handles 733 or 914, Pole Ring 151. Hardware for Open-In Ventilators includes: Handles 1071, 1171 or 1220; Spring Catch 39 or 739.

Windows are glazed from the inside. Glass is bed puttied and held by steel glazing angles mitered at the corners.

SECURITY WINDOWS

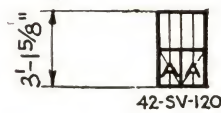
The Fenestra Security Window provides a modern steel window and protective steel grille in one unit, replacing the old-fashioned and costly wood windows with separate iron grilles, for use in the rear and side elevations of store and commercial buildings generally.



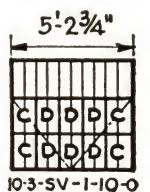
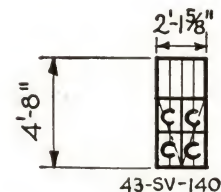
The Security Window, made in eight sizes, consists of a main frame $1\frac{3}{8}$ in. deep from front to back with muntin bars spaced to provide 6x18 in. openings. On the inside of the main frame is superimposed a projected-in ventilator with bars spaced to provide 12x17 in. openings. Ventilators are supported by steel side arms.

Openings in the ventilator and in the main frame above and below the ventilator are to be glazed but those immediately in front of the ventilator are left unglazed to act as a grille.

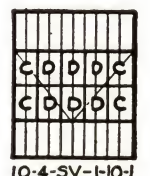
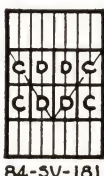
STOCK TYPES & SIZES



MUNTINS IN VENTS SHOWN BY HEAVY LINES. GLASS IS OMITTED FROM GRILLE DIRECTLY IN FRONT OF VENT. ~



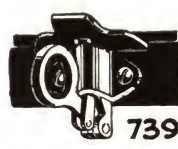
GLASS SIZES	
A	9 3/4" x 13 1/2"
B	12" x 13 1/2"
C	9 3/4" x 15 3/4"
D	12" x 15 3/4"



GLASS IN FIXED PANES (ALL LIGHTS IN GRILLE) ARE 5 7/8" x 18" ~ ~ ~



1220



739



39



151



733



1171



1071



150



914

STOCK AND STANDARD TYPES

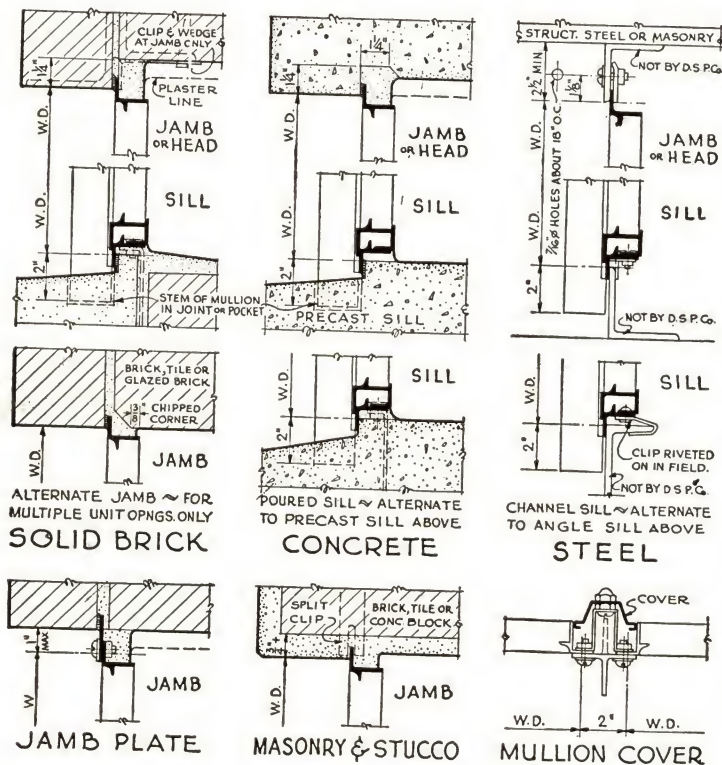
[illegible]

LISTED SPECIAL TYPES

S	10" GL - 6'-2 3/8"						
	20" GL - 6'-10 1/8"	24141	34162		54162		
T	18" GL - 7'-8 3/8"						
	20" GL - 8'-6 3/8"	25141	35163	352603	45142	55163	5523603
H	18" GL - 9'-5 1/8"						
	20" GL - 10'-3 1/8"	36163			46143	462614	56163
E	18" GL - 10'-9 1/2"						
	20" GL - 11'-1 1/2"	37161	37164	3723604	472414	57161	57164
I	WIDTHS 12" GLASS 2'-1 3/8" 14" GLASS 2'-5 5/8" 3'-2" 3'-8" 4'-2 3/8" 4'-10 3/8" 5'-2 3/8" 6'-2 3/8"						

COMMERCIAL PROJECTED

G-308



SILL DETAILS SHOWN FOR CONCRETE
CAN BE USED AS ALTERNATES TO DETAIL
SHOWN FOR SOLID BRICK (OR OTHER MASONRY).
STEM OF VERTICAL MULLION MAY BE TURNED
OUT OR IN. WHEN STEM IS TURNED OUT, GREATER

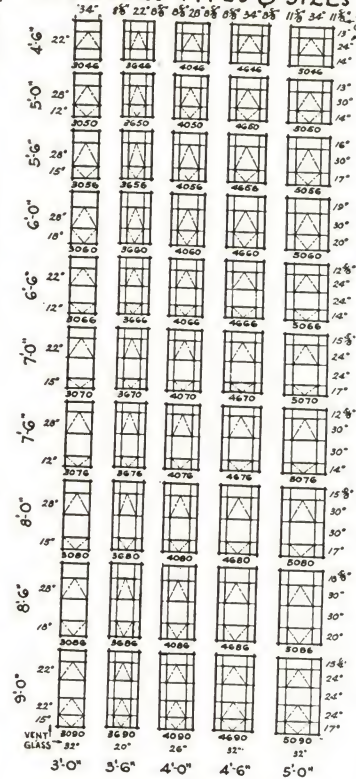
STIFFNESS IS SECURED. NOTE IN SILL DETAILS THAT STEM OF MULLION ANCHORS INTO SILL, EITHER AT A JOINT OR INTO A POCKET PREPARED FOR IT.

STRUCT. STEEL, CAULKING OR GROUT NOT BY D.S.P.C.

PIVOTED & COMMERCIAL PROJECTED

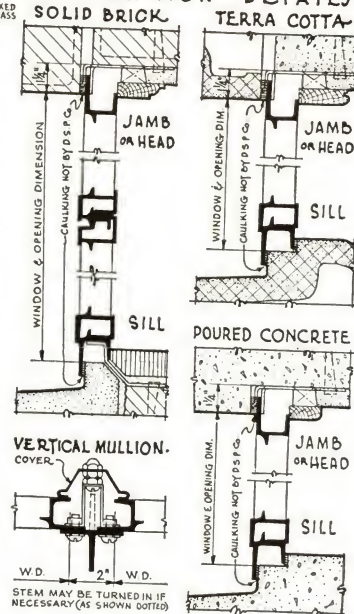
L-120

STANDARD TYPES & SIZES



SIZES SHOWN ARE WINDOW & OPENING-
DIMENSIONS FOR SINGLE UNITS.

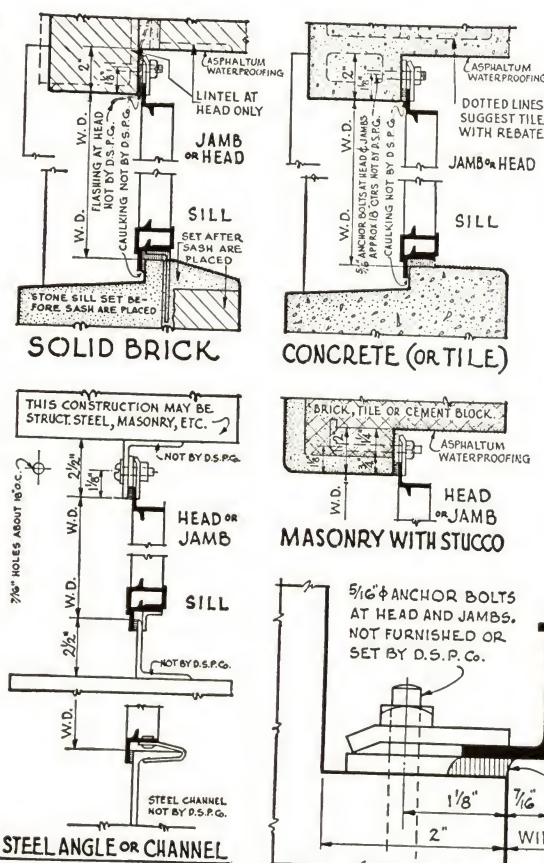
INSTALLATION DETAILS



TO FIGURE OPENING WIDTHS OF COMBINED UNITS, ADD 2" FOR EACH VERTICAL MULLION. STONE VENEER DETAIL IS SIMILAR. TO SOLID BRICK, ORNAMENTAL METAL DETAIL IS SIMILAR TO TERRA-COTTA. INSTALLATION INTO PREPARED OPENINGS AS SHOWN IS RECOMMENDED. GLAZING ANGLES (FURN BY D.S.P.Co.) ARE STANDARD. PUTTY GLAZED IF DESIRED, GLASS, PUTTY & GLAZING NOT BY D.S.P.Co.

ARCHITECTURAL PROJECTED

G-209



NOTE
THESE DETAILS FOR
INSTALLATION OF
STEEL WINDOWS INTO
PREPARED OPENINGS
ARE RECOMMENDED
FOR PREVENTION OF
CORROSION. THEY
SHOW WATERPROOF-
ING AND CAULKING
AROUND THE ENTIRE
OPENING, FLASHING
AT HEAD OF MASONRY
DETAIL AND ACCESS
IBILITY OF HEAD AND
JAMBS FOR PAINTING ETC
FLASHING AT HEAD,
ANCHOR BOLTS ON
18" CENTERS AT HEAD
AND JAMBS OF MAS-
ONRY OPENINGS, NOT
FURNISHED OR SET
BY D.S.P. Co.

THE APPLICATION OF ASPHALTUM WATER-PROOFING AROUND MASONRY OPENINGS IS RECOMMENDED. NOT FURNISHED OR APPLIED BY D.S.P. Co. CAULKING NOT BY D. S.P. Co. EXCEPT UNDER SEPARATE CONTRACT.

- CAULKING NOT
BY D.S.P.Co.

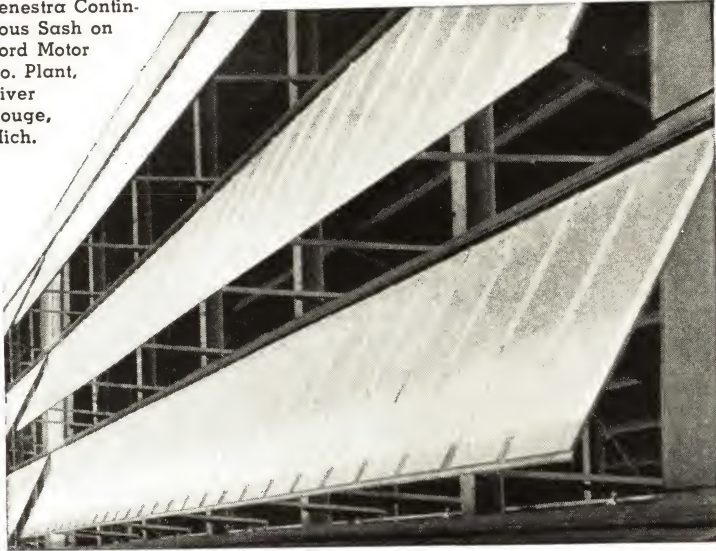
PIVOTED AND COMMERCIAL PROJECTED L-124

CONTINUOUS WINDOWS

Fenestra Continuous Windows are steel panel frames usually about 3 ft. to 6 ft. high and 20 ft. long, designed to be connected end to end, hinged to the building construction and mechanically operated as single units perhaps 100 ft. or more in length.

These windows are intended primarily for use in monitor and saw-tooth-roof construction where the plane of the window is on a slope. However, they may be used, where necessary, when the windows are in a vertical plane.

Fenestra Continuous Sash on Ford Motor Co. Plant, River Rouge, Mich.



Standard units are made in any height (not exceeding 6 ft. 0 in.) and 20 ft. 0 in. long.

Units less than 20 ft. long should be designed to some multiple of 4 ft. 0 in. in length (that is 4 ft., 8 ft., 12 ft. or 16 ft.). Where this is impossible, they should be designed to some multiple of 2 ft. 0 in. in length (8 ft., 10 ft., 12 ft., 14 ft., etc.).

All members of Fenestra Continuous Windows are especially designed, hot rolled, solid steel, vertex sections. Head and jamb sections are special angles. Muntins are "T" Sections 1 3/8 in. deep. Sills are especially designed with long, down-standing legs bent at the end to make close contact with the building construction.

All members are accurately fitted and rigidly riveted at joints to form standard panel units which are joined end to end (at time of erection) by splice plates bolted to head and sill members midway between muntins.

A stationary panel 2 ft. 0 in. wide is supplied as a finishing panel between any swinging section and the adjacent building construction and a stationary panel 4 ft. 0 in. wide is supplied between any two adjacent swinging sections.

Joints between any swinging sections and stationary panels are covered and protected by an especially formed, 13-gauge, steel channel with legs turned in. One leg of this channel is bolted to the end angle of the swing section and the other leg protrudes so as to overlap the end angle of the stationary panel as the window closes.

Where required, storm panels 2 ft. 0 in. wide are supplied (at extra cost). These storm panels are attached to the end and intermediate stationary panels and underlap the swing section. All storm panels are provided with a formed, continuous drip board set over the sill flashing.

Fenestra Continuous Top Hung Windows are equipped with heavy, hot dipped, galvanized steel butts with 1/8 in. brass pins. These butts are spaced 4 ft. 0 in. on centers and are rigidly riveted to the head angle of the windows. Bolts are supplied for attachment to the building girts.

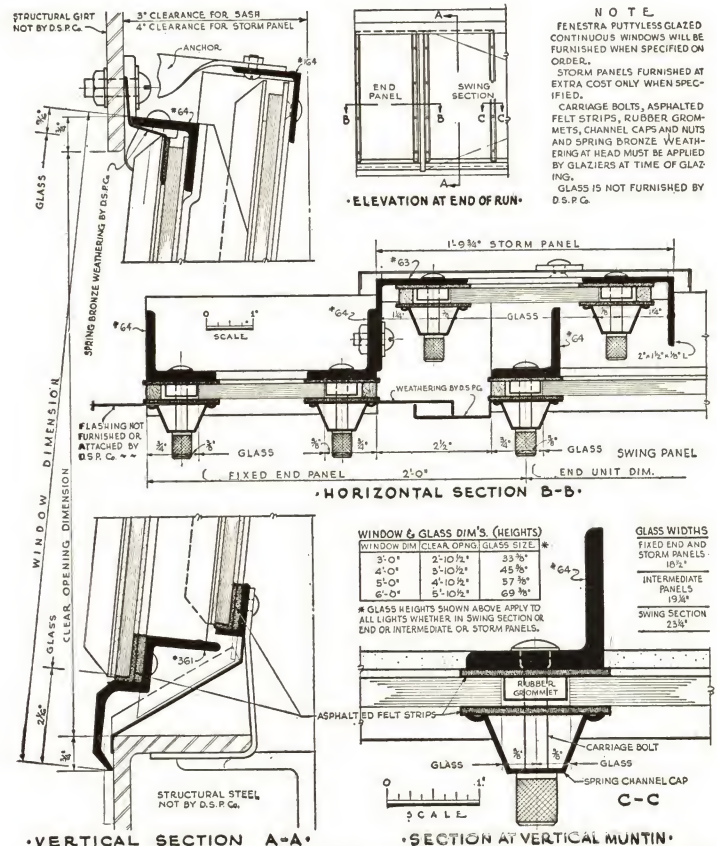
Where the Continuous Windows are to remain fixed in the opening (no provision for operation) the butts at the head are eliminated and heavy steel angle clips are provided for bolting to the window head and to the building girts. Flat steel clips are furnished for bolting to the sill of the window, the clips being bent around the steel sill girts to hold the window rigidly in place at the bottom.

All Fenestra Continuous Windows should be erected by the Fenestra Construction Co. (a subsidiary of Detroit Steel Products Co.) under a separate contract.

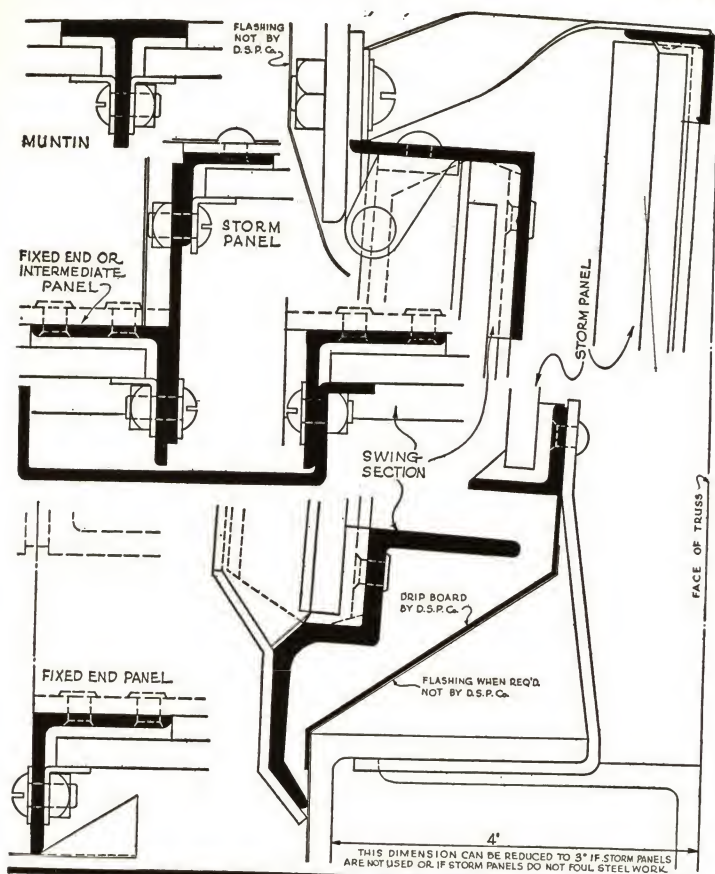
All Continuous Windows are given one dip coat of red mineral paint by the manufacturer before shipment. The painting contractor, as part of his contract, should apply an additional coat of paint after erection but before the windows are glazed. Further painting should then be deferred until at least three weeks after glazing to permit the putty to set. One or more additional coats may then be applied as desired.

Fenestra Continuous Windows should be glazed with 1/4 in. rough wire glass. Putty must be a high grade of steel window putty. Ordinary wood window putty cannot be used. The windows are glazed from the outside, the glass being set in a heavy bed of putty and secured at the muntins and end angles by angle clips and bolts.

Where specified, Continuous Windows arranged for puttyless glazing are supplied at extra cost. In this type, muntins are angles instead of T bars and glass is resiliently mounted on asphalt coated felt strips at jambs and sill. An additional felt strip is laid over the glass at the jambs and muntins and the glazing is completed by use of formed, galvanized steel caps held by bolts with knurled nuts. Spring bronze weathering is supplied at the head. This arrangement saves time and labor in glazing and glass breakage due to expansion variation is greatly reduced.



CONTINUOUS WINDOWS ~ PUTTYLESS TYPE P-112



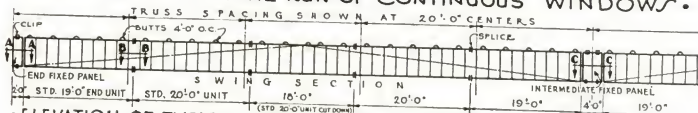
P-106

- PUNCHING OF STRUCTURAL STEEL FOR CONTINUOUS WINDOWS.**
- TRUSSES SPACED IN ANY MULTIPLE OF 2'-0" (16'-0" TO 26'-0")
- 7/16" Ø HOLES SPACED 2'-0" ON CENTERS
- PUNCHING OF GIRTS FOR TRUSS CENTERS OF 16'-18'-20'-22'-24' OR 26' FEET.**
- TRUSSES SPACED IN UNEVEN DIMENSIONS (17'-0" - 19'-0" 21'-0" ETC)
- 7/16" Ø HOLES SPACED 2'-0" ON CENTERS 4'-0" 7/16" Ø HOLES SPACED 2'-0" ON CENTERS
- PUNCHING OF GIRTS FOR TRUSS CENTERS OF 17'-19'-21'-23' OR 25' FEET.**

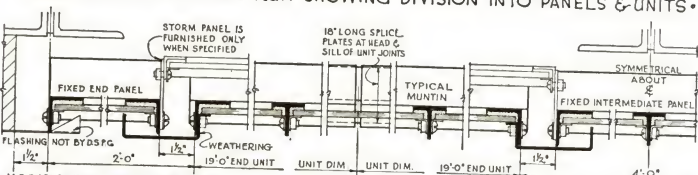
THRU THE JOINT (IF POSSIBLE) OR A HOLE
LOCATED AND PUNCHED BY WINDOW ERECTORS.
GIRTS FOR TRUSS CENTERS NOT MULTIPLES
OF 1'-0" MUST BE PUNCHED IN THE FIELD.
INTERMEDIATE VERTICAL SUPPORTS NOT
MORE THAN 10'-0" ON CENTERS ARE RECOMMENDED.
HORIZONTAL GIRTS, VERTICAL SUPPORTS
AND PUNCHING AS ABOVE, TO BE PROVIDED
BY STRUCTURAL CONTRACTOR.



- DETAILS OF TYPICAL RUN OF CONTINUOUS WINDOWS.



- ELEVATION OF TYPICAL RUN SHOWING DIVISION INTO PANELS & UNITS. •



- SECTION B-B •

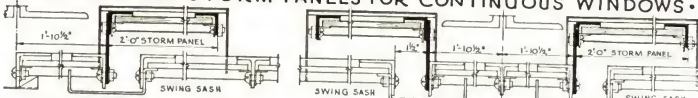
• SECTION B-B •

• HORIZONTAL SECTION C-C

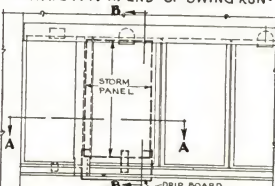
LENGTHS OF RUNS SEE CONTINUOUS OPERATOR CATALOG.
FIXED SASH ARE SIMILAR TO TOP HUNG EXCEPT THAT CLIPS AT HEAD AND SILL REPLACE BUTTS AND FIX SASH IN PLACE. A FIXED INTERMEDIATE PANEL IS REQUIRED EVERY 200 FEET TO PROVIDE EXPANSION. IF SPECIFIED, A SWING SECTION MAY BE FIXED AT SILL BUT HUNG WITH BUTTS AT HEAD FOR FUTURE OPERATION.

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- ### • DETAILS OF STORM PANELS FOR CONTINUOUS WINDOWS.



- SECTION AT INTERMEDIATE FIXED PANEL BETWEEN RUNS

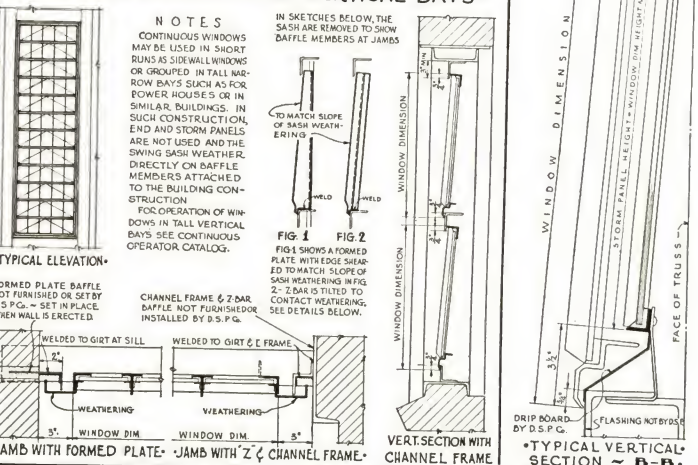


- ELEVATION AT END OF SWING RIIN •

NOTES

STORM PANELS ATTENDS OF SWING SECTIONS OF TOP HUNG WINDOWS PROVIDE PROTECTION FROM WEATHER WHEN SWING SECTIONS ARE OPENED. STORM PANELS ARE FURNISHED AT EXTRA COST ONLY WHEN SPECIFIED THEY ARE NOT USED WITH CONTINUOUS WINDOWS IN SIDE WALL CONSTRUCTION OR IN TALL VERTICAL BAYS AS IN DETAILS SHOWN BELOW.

- CONTINUOUS WINDOWS IN TALL VERTICAL BAYS •



- ## CHANNEL FRAME

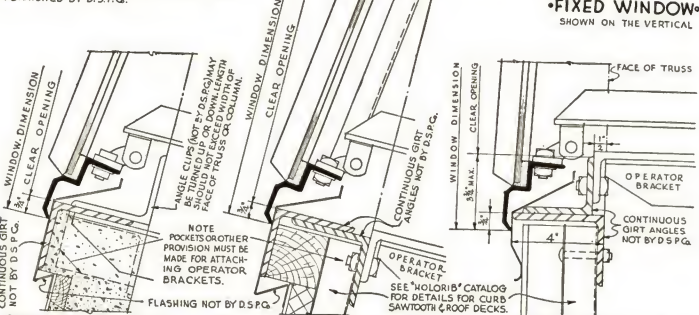
- SECTION
- $\approx B-B$

- | WINDOW DIM. | CLEAR OP'NG | GLASS SIZES | |
|-------------|-------------|-------------|-----------|
| HEIGHT | HEIGHT | WIDTH | HEIGHT |
| 3'-0" | 2'-10 1/2" | 23 1/2" | 2'-9 3/4" |
| 4'-0" | 3'-10 1/2" | 23 1/2" | 3'-9 3/4" |
| 5'-0" | 4'-10 1/2" | 23 1/2" | 4'-9 3/4" |
| 6'-0" | 5'-10 1/2" | 23 1/2" | 5'-0 3/4" |

GLASS IN FIXED END AND INTERMEDIATE PANELS IS 22" IN WIDTH. HEIGHTS AS IN TABLE ABOVE. ~ ~
GLASS IN STORM PANELS IS SAME SIZE AS THAT
IN SWING PANELS AS IN TABLE ABOVE.

- N O T E S •

CONTINUOUS WINDOWS MAY BE ON THE VERTICAL OR ON A SLOPE NOT TO EXCEED 30% FROM VERTICAL. STORM PANELS, AT ENDS OF SWING SECTIONS, WILL BE FURNISHED AT EXTRA COST WHEN SPECIFIED. SEE DETAILS ON STORM PANEL PLATE. FLASHING AND STRUCTURAL STEEL NOT FURNISHED BY D.S.P.G.



- DOUBLE SILL DETAIL-2.

- DOUBLE SILL DETAIL-2.

- DOUBLE SILL DETAIL - 7 -

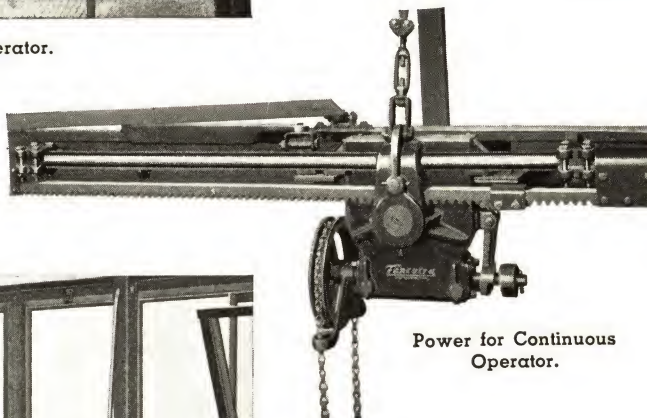
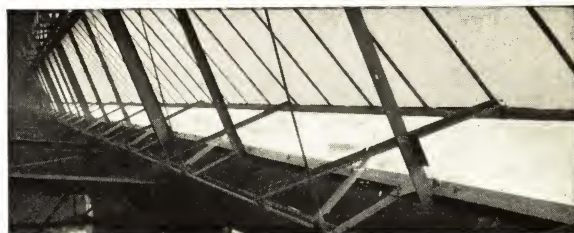
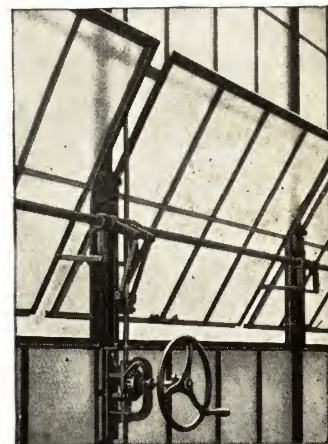
P-108

P-109

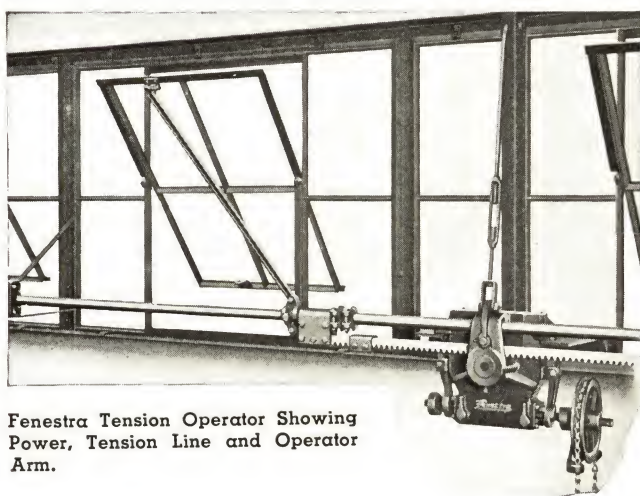
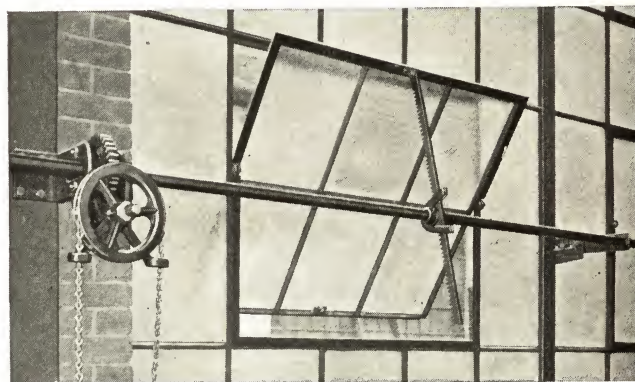
OPERATING DEVICES



Worm and Gear Operator.

Continuous
Operator—Right.Power for Continuous
Operator.

Screw Type Operator.

Fenestra Tension Operator Showing
Power, Tension Line and Operator
Arm.

Rack and Pinion Operator.

Fenestra Operating Devices are not sold as separate products, but only as methods of mechanically opening and closing Fenestra Windows. Erection should always be handled by the Fenestra Construction Company or an authorized Fenestra agent.

Due to the variety of conditions encountered, it is advisable that a Fenestra Engineer be consulted to insure a practical and economical layout. The types shown are standardized designs which are adequate to meet most conditions.

All painted operator parts and fittings receive a priming coat of grey paint at the factory. Specifications should provide for finish painting by painting contractor after erection.

Fenestra Worm and Gear Operator is designed for manual operation, controlling horizontally pivoted or projected ventilators in single or multiple tiers. The power consists of a machine-cut, cast-iron worm, equipped with ball thrust bearings, operating a cast-iron segmental worm gear assembled in a steel housing. The power, for chain or mitre gear and pipe control, is located preferably in the center of the run, but may be located at the end.

Fenestra Continuous Operator is designed to operate continuous windows, either manually or electrically in single or multiple banks. Heavy construction and extreme care in assembly give this operator unusual strength and reliability. The power may be located at either end of the run, not closer than 20 ft. to the end. Operator arms are spaced about 10 ft. on centers.

Tension Operator is designed to operate long runs of horizontally pivoted ventilators. In general construction and design Tension operator is similar to Continuous operator. Power and transmission lines are the same, except that each power is equipped with a double stop so that all movement is stopped and power cut off both when the vents are closed and when they are fully open. Power may be attached at either end of the run not closer to the end than 20 ft. Operator limited (single power) to 300 ft.

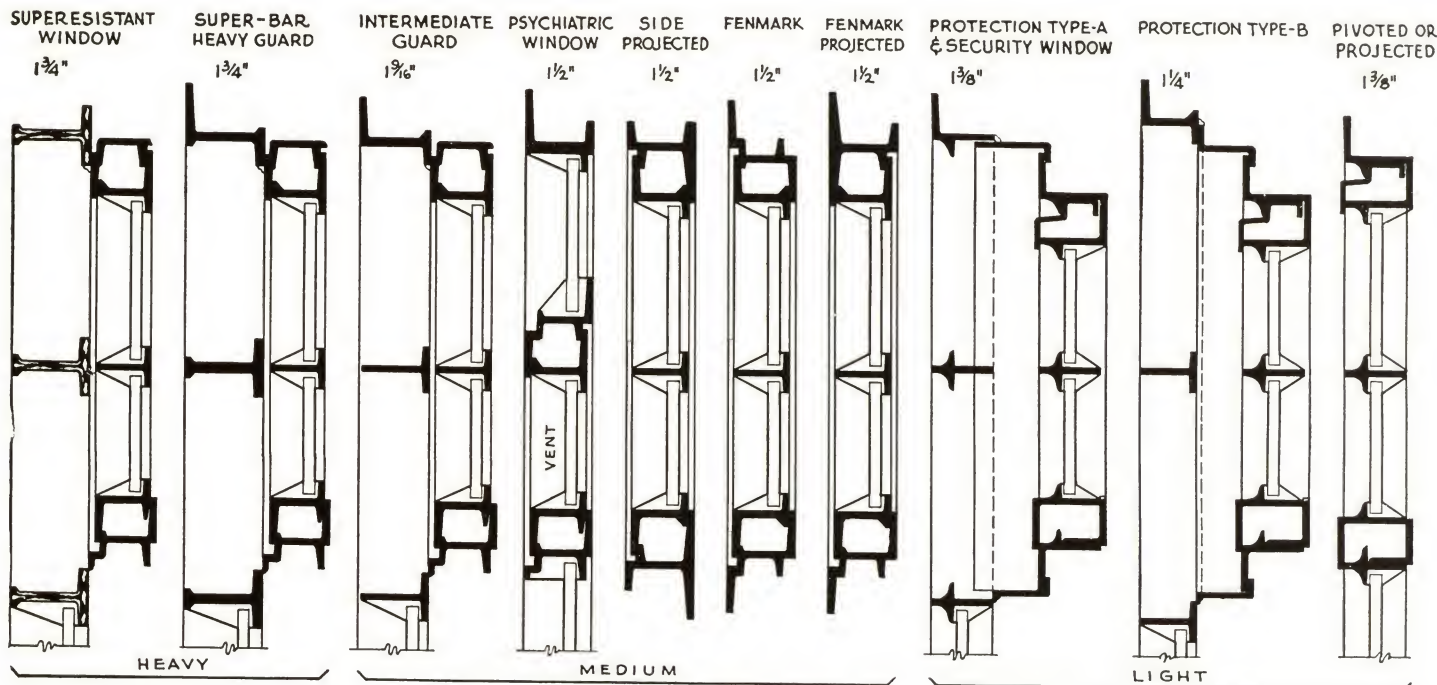
Fenestra Screw Type Operator is designed for neat, inconspicuous appearance. The vertical pipe, horizontal transmission line and ventilator arms lie snugly against the inside face of window. The power may be manually or electrically controlled. This device is particularly suitable for high openings containing vertical tiers of ventilators.

Fenestra Rack and Pinion Operator is similar to worm and gear, except that the operator arms are straight racks engaging pinions on the transmission line. Considerably longer runs may be controlled from one power. Operation may be by chain or mitre gear and vertical pipe, or an electrical hook-up may be used. Rack and pinion operator will handle short runs of Fenestra Continuous Windows.

DETENTION WINDOWS

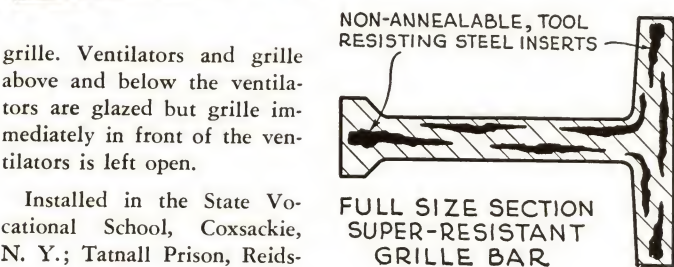
Detention institutions may be divided into two classes: (a) those caring for psychopathic and mentally diseased patients, such as hospitals, "homes," asylums, etc. and (b) corrective institutions including penitentiaries, prisons, jails and detention schools. Both types of institution may need "light" detention (moderate restriction) in certain rooms or certain buildings and "heavy" detention (absolute confinement) in others.

The design of Fenestra Detention Windows is determined largely by the degree of restriction needed and by the architectural effect desired. Types of detention windows shown here are only a few of the many which are available. Any windows required to afford a degree of detention should be scrutinized closely. Fenestra engineers will be glad to assist in choosing or designing windows to best meet individual conditions.



SUPER-RESISTANT WINDOWS

Super-resistant Windows have the appearance of heavily built industrial windows but provide maximum detention without the use of separate bar guards. They are designed with fixed light grilles, frames and muntins being tool-resisting steel. Sections are 1 3/4 in., hot rolled, with matrix of soft, low-carbon steel. In this matrix are imbedded steel inserts which are non-annealable and resistant both to hack-saw and breast-drill. Muntins in the grille extend 9 in. into the masonry if so specified. Intersections are interlocked and welded in such a manner that they cannot be sawed. Open-in ventilators are superimposed inside the fixed



grille. Ventilators and grille above and below the ventilators are glazed but grille immediately in front of the ventilators is left open.

Installed in the State Vocational School, Coxsackie, N. Y.; Tatnall Prison, Reids-

ville, Ga.; Anamosa State Hospital, Anamosa, Iowa, and in numerous other institutions.

SUPERBAR (HEAVY GUARD) WINDOWS

Superbar Windows have fixed grilles of 1 3/4 in. section weighing slightly more than 2 lbs. per lineal foot. Glass lights 6x9 in. Frame corners and muntin intersections are welded inside and out, muntin joints being so formed that their construction is not revealed. Open-in ventilator is solidly welded to inside the grille. The fact that ventilators open in at the top assures ample fresh air, without direct drafts, regardless of weather conditions. Degree of opening is limited by "tamper-proof" stops removable only by means of a master tool. Operated by hand or pole individually, or in groups, mechanically. Applicable to exterior walls of cell blocks without the use of separate bar guards. Windows of similar design may be had with sections 1 1/2 in.

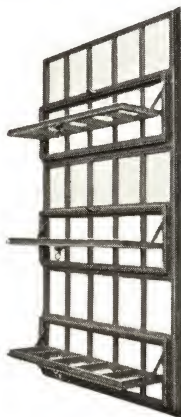
and 1 1/4 in. deep.

These windows have been installed on Alcatraz Island, Calif.; Tatnall Prison, Reidsville, Ga.; State Penitentiary, Jefferson City, Mo.; Federal Penitentiary, Atlanta, Ga.; Erie County Penitentiary, Wende, N. Y.; Clinton Prison, Dannemora, N. Y. and hosts of others.

INTERMEDIATE GUARD WINDOWS

Intermediate Guard Windows have a fixed grille of standard 1½ in. section with an open-in ventilator superimposed on the inside. Glass lights 6x9 in. Ventilators may be designed to provide as much ventilation as desired and are usually mechanically operated in banks. Adapted to court openings in corridors, dormitories, recreation buildings, etc.

Used in the Federal Penitentiary, Milan, Mich.; Intermediate Reformatory, Algoa, Mo.; New Eastern Penitentiary, Graterford, Pa.; Sing Sing Prison, Ossining, N. Y.; State Reformatory, Mansfield, Ohio; New State Penitentiary, Statesville, Ill.; and in many other locations.

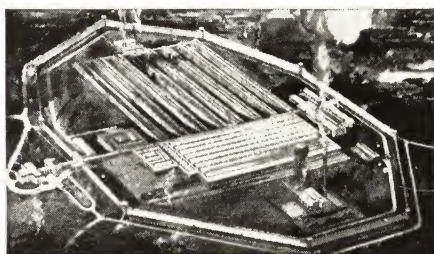


PSYCHIATRIC WINDOWS

Psychiatric Windows are made of Projected Fenmark, heavy casement sections with open-in ventilators accommodating 6x9 in. glass.

Ventilators limited to a maximum opening of 5 in. Ventilators are one-light-high and may provide 100% ventilation or may be alternated with fixed sections if desired. A special two-light-high vent for convenience in washing is available and may be unlocked and opened farther than 5 in.

These windows have been adopted as standard by the New York State Department of Public Works. Used in Pilgrim Hospital, Brentwood, N. Y.; Rockland State Hospital, Rockland, N. Y. Similar windows have been used in State Hospital, Fairfield, Conn.; State Hospital, Ypsilanti, Mich.; State Hospitals at Utica and Rochester, N. Y.; State Hospital, Howard, R. I.; and in numerous others.



New Eastern Penitentiary, Graterford, Pa.



State Vocational School, Cossack, N. Y.



Shop Building at Sing Sing Prison, Ossining, N. Y.

SIDE PROJECTED WINDOWS

Side Projected Windows are built from heavy casement sections, detention being secured by limiting all movable portions to a maximum opening of 5 in. Two side-projected leaves (a single leaf cannot be used) are opened at the same time by a screw-type device concealed under the steel stool and are locked individually by cams concealed in the vertical meeting rail. Unit widths are limited to 3 ft. 0 in. minimum and 4 ft. 6 in. maximum. Side-projected leaves are limited to 5 ft. 0 in. maximum height. A single removable handle is used for operating. These windows are particularly clean cut in appearance, have no projecting hardware and are easily screened or shaded on the inside.

Side-Projected Windows have been or are being used in the State Hospital, Athens, Ohio; Psychiatric Clinic, Fulton, Mo.; Cuyahoga County Detention Home, Cleveland, Ohio; Jackson County Parental School, Kansas City, Mo.; State Hospital, Columbus, Ohio; Industrial Home for Girls, Chillicothe, Mo.; and in many other institutions.



FENMARK AND PROJECTED FENMARK WINDOWS

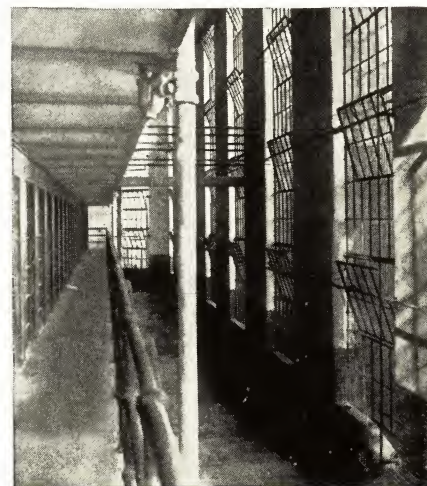
These windows are standard Fenmark Types with muntins spaced to provide approximately 6x9 in. glass lights and ventilators equipped with stops to limit their opening to a maximum of 5 in. The upper portion of the window has side hung open-out swing leaves, the lower portion being equipped with a projected-in sill ventilator. This sill ventilator is one of the outstanding features of this type and is particularly desirable wherever ventilation without direct draft is a factor.

Fenmark Detention Windows were specified and used by Architects Hoener, Baum and Froese in the Psychiatric Clinic, an addition to the main group of buildings at State Hospital No. 1, Fulton, Mo.

Projected Fenmark Detention Windows are standard Projected Fenmark Types with standard cam acting lock and keeper but limited as to glass size and ventilator opening area. Their construction is identical with that described under Psychiatric Windows.



Pilgrim State Hospital, Brentwood, N. Y.



Wisconsin State Prison, Waupun, Wis.

PROTECTION TYPE WINDOWS

Protection Type-A Windows have a fixed grille of standard $1\frac{3}{8}$ in. deep sections with a projected-in ventilator superimposed on the inside. Construction is same as for Security Windows (see Page 31) but they may be obtained in any size not exceeding 6 ft. 6 in. wide by 9 ft. 6 in. high. Protection Type-B Windows are similar to Type-A except for grille which is constructed of $1\frac{1}{4}$ in. deep sections. (See Page 36.)

Protection Type Windows have been used in numerous small jails and lock-ups where light detention was sufficient, but their chief function is to provide protection rather than detention. In institutions, they could be used to advantage in store rooms and warehouses to discourage pilfering. In commercial buildings they are ideal for the side and rear elevations of stores where they offer a single unit taking the place of the old fashioned wood windows with separate iron grilles.

PIVOTED AND COMMERCIAL PROJECTED WINDOWS

Horizontally Pivoted and Commercial Projected Detention Windows are made from $1\frac{3}{8}$ in. sections with one-pane high ventilators and glass lights 6x9 in. Maximum opening is limited to 6 in.

These light detention units are used frequently in workshops, recreation buildings and dining halls inside the institution walls. Several tiers of ventilators often are joined by double connecting bars and mechanically operated from one centrally located station.

Commercial Projected Types are particularly desirable where screening is a major factor as in kitchens, cafeterias, etc.

Pivoted and Commercial Projected Windows have been installed in numerous institutions including: Michigan State Prison at Jackson; Illinois State Penitentiary at Pontiac, Ill.; Federal Penitentiary at Lewisburg, Pa.

While Fenestra Detention Windows are designed to make bar guards unnecessary, the use of such guards does not imply the elimination of Fenestra Windows. Many standard types of Fenestra, including even light casement types have been used successfully with bar guards either outside or inside, typical examples being the administration building in the Federal Penitentiary at Milan, Mich. and the Federal Penitentiary at Lewisburg, Pa. In both of these institutions, Fenwrought Casements were used with bar guards on the inside.



Cell Block at Illinois State Penitentiary, Pontiac, Ill.

FENESTRA INSTITUTIONAL DOORS

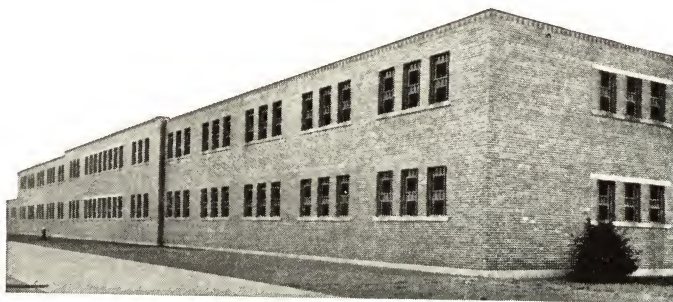
Fenestra Industrial Doors have been used in standard types and sizes in numerous hospitals and prisons, particularly in the service departments and shop buildings. They may be adapted, also, for moderate detention, by spacing muntins to provide restricted glass lights and by the use of special hardware.

At Tatnall State Penitentiary in Reidsville, Ga., four types of Fenestra Industrial Doors were used in the kitchen and in the utility and manufacturing buildings. These included double swing, accordion, double sliding "Round-the-Corner," both four and six leaf doors.

In the Federal Penitentiary at Milan, Mich., Fenestra channel frame steel doors were used in both exterior and interior openings throughout the entire group of buildings except doors opening from the administration building into the corridors which led to cell blocks and dormitories.

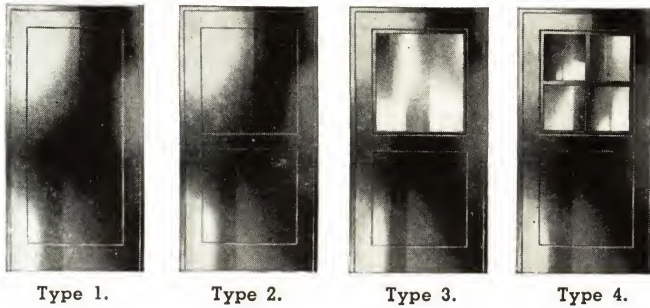


Fenestra Fenmark Side-Projected Detention Windows, Transom Type. Cuyahoga County Detention Home and Juvenile Court Building, Cleveland, Ohio



Federal Prison, Milan, Mich. This dormitory and cell block, equipped with Fenestra Superbar Windows, faces the street with no surrounding wall.

FIRESHIELD DOORS



Single and double swing, hollow steel doors, shipped complete with hardware and door-frames (but not glazed). Four door designs; ten door sizes. Choice of five locks, three hinge designs, eight hardware finishes.

Designed for exterior and interior use in stairway entrances, service halls, class rooms, store rooms, industrial offices, dressing rooms, and the service departments of hotels, apartments and public buildings generally.

Stiles and rails are 16-gauge, formed and welded steel tubes (head, jamb and intermediate members, $4\frac{1}{4}$ in. wide; sill stile, $6\frac{1}{4}$ in. wide) with corners mitered, welded and ground smooth. Panel in Type 1 is 16-gauge, patent leveled steel; all other panels are 18-gauge. All panels are spot welded to stiles and rails. All doors have beveled edge on lock stile and are mortised and reinforced to receive hinges, locks and door checks.

Ornamental, rolled steel, cove moulding on the inside of lower panel supplied at extra cost where specified.

Glass is not furnished. Quarter inch plate or factory ribbed glass is recommended set in steel window putty and held by steel glazing angles which are already fitted and attached.

Door Frames are 16-gauge steel formed into channels with integral rebates and stops. Frames are designed in three standard depths, $5\frac{1}{2}$ in., $7\frac{1}{2}$ in. and 10 in. Sill anchors, masonry anchors, and spreader bars are included. Frames are shipped either knocked down or assembled as specified.

Door Widths		Door Heights
Single Doors	Double Doors	
2' 6"	5' 0"	6' 6"
2' 9"	5' 6"	6' 9"
3' 0"	6' 0"	7' 0"

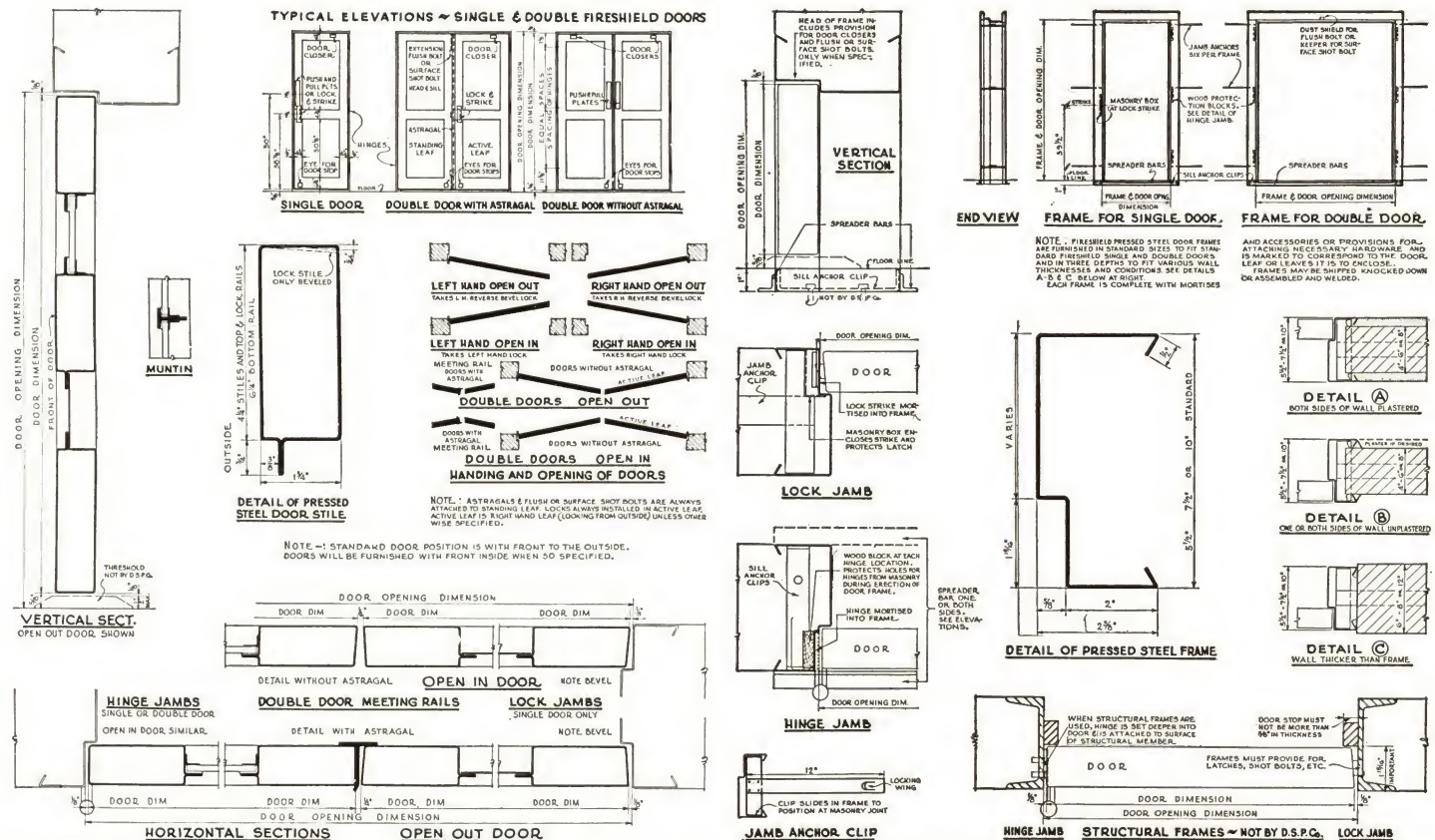
Any width may be combined with any height shown. Special doors, 3 ft. 9 in. by 7 ft. 0 in. and 7 ft. 6 in. by 7 ft. 0 in. also are available.

Doors and frames are given one protective coat of gray paint at the factory before shipment. At extra cost, when specified, they will be Bonderized and given a gray paint finish.

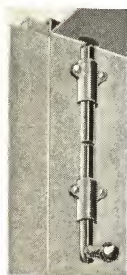
Doors may be obtained with jute faced corrugated sound deadening section in all stiles and rails, at extra cost. (Such doors cannot be Bonderized.)

Transom frames equipped with either fixed lights or ventilators, available to fit any standard Fireshield Door width.

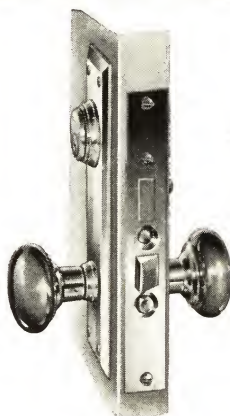
Fireshield Doors (swing type) with insulated panels and with stiles and rails insulated or non-insulated as required, can be supplied to meet all Underwriters' requirements for labeled doors in Classes B, C, D and E.



FIRESHIELD DOOR HARDWARE



1499

Surface
Shot Bolt.

1487



1484

Other hardware, available where specified, includes: Pull Handle and Plate, 1490; Push Plate, 1491; Flush Bolt, 1492; Floor Stop with Hook, 1493; Floor Stop without Hook, 1494; Door Closer, 1462; Door Closer Bracket, 1466.

COMPARABLE FINISHES FOR HARDWARE

D.S.P. Co. & U. S. Stand.	Description	SAR-GENT	McKIN-NEY	RUSSELL & ERWIN	YALE	COR-BIN	STAN-LEY
U. S. 9	Polished Bronze	P	B	11	BZ10	8	A
Stock Standard—Immediate shipment.							
U. S. 4	Dull Brass	OB	OB	9	AY22	EA	F
U. S. 6	Sanded Brass	RD	XBS	O9C	AX28	SKA	SF4
*U. S. 18	Bower Barff	BB		46	FX80	F	
*U. S. 19	Bower Barff (imitation)	BN	EDB	47	FX90	KF	H
U. S. 9 Special	Dull Bronze (oil rubbed)	O3P	DA	13NL	BY23	ED	A9
These finishes not stocked—no extra charge—3 weeks shipment.							
U. S. 14	Nickel Plated	N	N	4	NZ10	E	N
U. S. 26	Chromium Plated	CM	C	24	DZ10	CR	CM

Extra charge—3 weeks shipment.

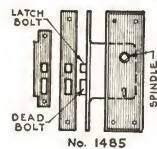
*When U. S. 18 finish is required, this is supplied for all items except butts which will have U. S. 19 finish.

COMPARABLE LOCKS

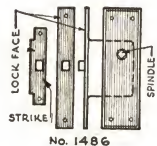
D.S.P. CO. LOCKS
(Include 2" Knobs)

SARGENT YALE & TOWNE RUSSELL & ERWIN CORBIN

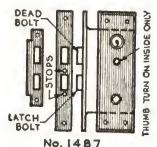
D. S. P. Co. Lock Set



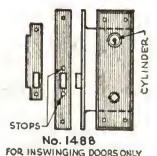
1485—Three tumbler, bit key lock, bronze front and strike. Bronze latch bolt operated from either side by knobs. Dead bolt operated from either side by key.



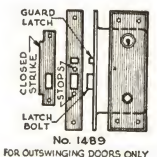
1486—Simple latch lock. Bronze latch bolt operated from either side by knobs. No key.



1487—Cylinder lock. Bronze latch bolt, dead bolt, front and strike. Cylinder outside; thumb turn inside. Outside knob set by stops in face of lock.



1488—Cylinder lock. Bronze latch bolt, front and strike. Outside knob set by stops in face of lock. No dead bolt.



1489—Cylinder lock. Bronze latch bolt, guard bolt, front and strike. Guard bolt automatically locks latch bolt (prevents picking). Outside knob set by stops. No dead bolt.

Design	Tarlton (TC)	Utopian BR (DH) ST (BU)	Berkley (Berk)	Portland BR 702 ST 602
1485	Lock 2" Knobs 5249 1772F	820 DO-35	0370 3/4 386	785 3/4 1419 1/2
1486	Design Lock 2" Knobs	Tarlton (TC) 4634 4635 1772F	Utopian BR (DH) ST (BU) 1003 1000 DO-35	Berkley (Berk) 029 021 025 386
1487	Design Lock 2" Knobs	As above 6745 As above	As above 7790 As above	As above 11248 1248 As above
1488	Design Lock 2" Knobs	As above 6745 1/2 As above	As above 7790 As above	As above 11248 1/2 1248 1/2 As above
1489	Design Lock 2" Knobs	As above 6705 1/2 As above	As above 7656 As above	As above 11456 As above

COMPARABLE IN DESIGN AND FUNCTION TO

COMPARABLE BUTTS

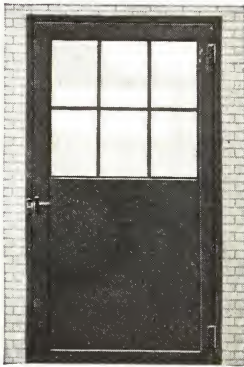
Description	D. S. P. Co.	STANLEY	McKINNEY
Plain Steel plated	1482	179	T-2714
Ball bearing Steel plated	1483	BB-179	TB-2768
Ball bearing Bronze polished	1484	BB-193	TB-3366

All butts are 4 1/2 in. by 4 1/2 in. full mortise template butts.

NOTE: Fenestra Fireshield Door Locks are similar in design and function to manufacturers' standard as listed, except that they are equipped with larger and heavier U. S. Government standard fronts and strikes. These locks are designed for exclusive use with Fenestra Fireshield Doors and are not carried in stock by other manufacturers listed. Except as noted, locks are for use on inswinging or outswinging doors. Locks are not reversible but are handed to fit door. The hand and swing of door must be specified.

When doors are used in structural frames, strikes can not be attached unless frames are mortised to receive them.

INDUSTRIAL DOORS



Fenestra Swing Door



Fenestra Double Sliding Doors

Fenestra Industrial Doors are designed for service openings in all types of commercial, industrial, institutional and public buildings. They may be single or double, swing or slide. Standard steel frames are available for swing doors 10 ft. 0 in. or less in height and their use is strongly recommended. Frames not supplied for sliding doors. All doors glazed from inside with $\frac{1}{4}$ in. plate glass, bed putted and held by steel glazing angles, mitered at corners and fitted and shipped attached. (Glass not furnished.)

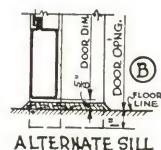
Doors and frames are given one standard shop coat of metallic primer before shipment. When desired, doors within certain limits of size will be furnished with a Bonderized and baked-on paint finish. Consult Fenestra representative for details.

INDUSTRIAL DOORS—SERIES-FT

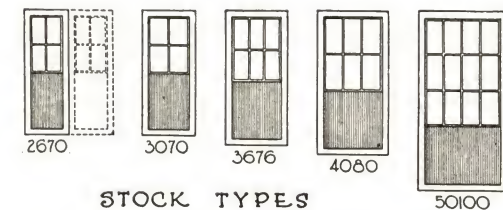
Series-FT Doors have stiles and rails of 5 in. by $1\frac{3}{4}$ in., 14-gauge pressed tube, with corners mitered, welded and ground smooth. Lower panels are of sheet steel, spot welded, 18-gauge in doors up to 4 ft. 0 in. wide, 14-gauge in wider doors. Muntins are membered and welded into stiles and rails. Maximum opening for swing doors, 10x15 ft.; for slide doors, 16x15 ft.



VERTICAL SECT.



ALTERNATE SILL



STOCK TYPES

NOTES

ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE SWING OR DOUBLE SWING AS INDICATED BY THE DOTTED LINES AT TYPE 2670.

FOR FRAME DETAILS FOR SWING DOORS SEE PLATE Y-504. JAMBS OF FRAMES ARE MADE TO ANCHOR INTO FLOOR. SEE SILL DETAIL AT LEFT.

TO ALLOW FOR SETTING THRESHOLD A CLEARANCE OF $\frac{5}{8}$ " HAS BEEN PROVIDED BETWEEN BOTTOM OF DOOR AND FLOOR LINE. WHEN THRESHOLD IS NOT DESIRED, THIS CLEARANCE MAY BE REDUCED BY CUTTING OFF ENDS OF FRAME OR BY SETTING THEM DEEPER THAN 1" BELOW THE FLOOR LINE.

THRESHOLD MAY BE FORMED IN THE FLOOR FINISH AS AT (A) OR AN AUXILIARY THRESHOLD OF WOOD OR METAL MAY BE USED AS AT (B).

THRESHOLDS ARE NOT FURNISHED BY D.S.P.CO. FOR DETAILS OF DOORS WITH ALL KICK PLATE PANELS SEE PLT Y-503

STOCK SIZES									
DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR
	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH	HEIGHT	WIDTH
SINGLE SWING									
2670	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"
3070	2'-11"	6'-11 1/2"	3'-0"	7'-0"	3'-0"	7'-0"	3'-0"	7'-0"	3'-0"
3676	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"
4080	3'-11"	7'-11 1/2"	4'-0"	8'-0"	4'-0"	8'-0"	4'-0"	8'-0"	4'-0"
50100	4'-11"	9'-11 1/2"	5'-0"	10'-0"	5'-0"	10'-0"	5'-0"	10'-0"	5'-0"
DOUBLE SWING									
3070	2'-5"	6'-11 1/2"	5'-0"	7'-0"	5'-0"	7'-0"	5'-0"	7'-0"	5'-0"
3676	2'-11"	6'-11 1/2"	6'-0"	7'-0"	6'-0"	7'-0"	6'-0"	7'-0"	6'-0"
4080	3'-5"	7'-5 1/2"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"
50100	4'-11"	9'-11 1/2"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"

STRUCTURAL FRAME FOR DOOR

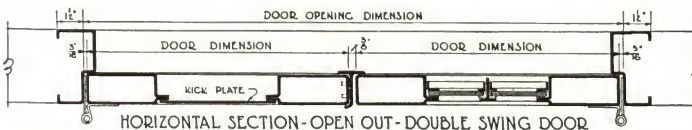
FRAME & STOP NOT FURNISHED BY D.S.P.CO.

DD D.O.D. IMPORTANT

DOOR DIMENSION

DOOR OPENING DIMENSION

OPEN IN SWING DOOR



HORIZONTAL SECTION-OPEN OUT-DOUBLE SWING DOOR

STOCK SIZES, SERIES-FT DOORS

SINGLE DOORS					DOUBLE DOORS				
Swing	Opening	Slide	Opening	Slide	Swing	Opening	Slide	Opening	Slide
Width	Height	Width	Height	Width	Width	Height	Width	Height	Width
2' 6"	7' 0"	2' 3"	6' 10 1/2"	5' 0"	7' 0"	4' 9"	6' 10 1/2"	6' 10 1/2"	6' 10 1/2"
3' 0"	7' 0"	2' 9"	6' 10 1/2"	6' 0"	7' 0"	5' 9"	6' 10 1/2"	6' 10 1/2"	6' 10 1/2"
3' 6"	7' 6"	3' 3"	7' 4 1/2"	7' 0"	7' 6"	6' 9"	7' 4 1/2"	7' 4 1/2"	7' 4 1/2"
4' 0"	8' 0"	3' 9"	7' 10 1/2"	8' 0"	8' 0"	7' 9"	7' 10 1/2"	7' 10 1/2"	7' 10 1/2"
5' 0"	10' 0"	4' 9"	9' 10 1/2"	10' 0"	10' 0"	9' 9"	9' 10 1/2"	9' 10 1/2"	9' 10 1/2"

INDUSTRIAL DOORS—SERIES-RT

Series-RT Doors meet certain conditions of size and severe usage where doors of lighter, pressed tube construction would be unsatisfactory. Constructed of rolled steel tube of two sizes— $1\frac{1}{2}$ x $2\frac{1}{2}$ in. tube for doors up to and including 10 ft. 0 in. high, and 3 x $2\frac{1}{2}$ in. tube for larger sizes. Normal maximum opening is 12x15 ft. (See types on plates Y-550 and Y-551.) Where larger openings are required (not exceeding 17x22 ft.) consult nearest Fenestra representative.

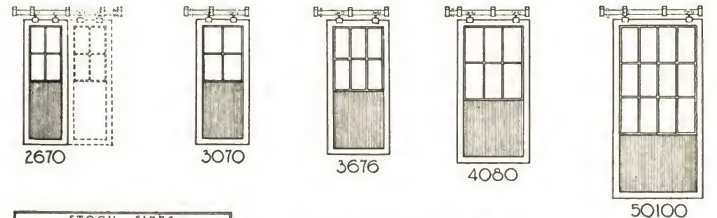
All Series-RT Doors have $1\frac{3}{8}$ in. deep, fixed sash panels in upper portion and 13-gauge sheet steel panels below.

HARDWARE FOR INDUSTRIAL DOORS (SERIES-FT & RT)

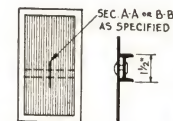
Standard hardware for swing doors: Loose pin butts (number depends on size of leaf) and chain and foot bolts for double doors. Available at extra cost; T-Latch with iron or bronze handles. Cylinder Locks (doors 10 ft. 0 in. or less in height) with iron or bronze Handles, Door Checks, Ball Bearing Butts.

Standard hardware for slide doors: Trolleys, Hangers, Track and Track Brackets, Hasp and Staple, Hand Pulls, Door Guides and Stops, Foot Bolts where required. Cylinder Locks available at extra cost for doors 10 ft. 0 in. high or less.

(Swing doors can be equipped with Antipanic Hardware where required. Master-keyed locks are supplied in Fenestra Master-Keyed system at no extra charge. Extra cost to match other systems. Where desired, purchaser can replace the regular cylinder to match any system.)

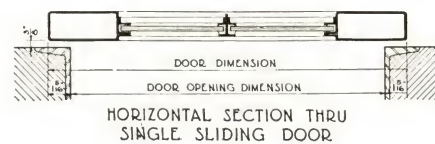
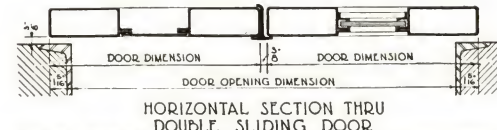
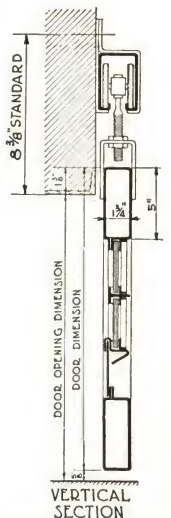


STOCK SIZES									
DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR	SIZE OF OPENING	GLASS	DOOR	SIZE OF DOOR
	WIDTH	HEIGHT	WIDTH	HEIGHT		WIDTH	HEIGHT		WIDTH
SINGLE SLIDE									
2670	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"	6'-11 1/2"	2'-5"
3070	2'-11"	6'-11 1/2"	3'-0"	7'-0"	3'-0"	7'-0"	3'-0"	7'-0"	3'-0"
3676	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"	7'-5 1/2"	3'-5"
4080	3'-11"	7'-11 1/2"	4'-0"	8'-0"	4'-0"	8'-0"	4'-0"	8'-0"	4'-0"
50100	4'-11"	9'-11 1/2"	5'-0"	10'-0"	5'-0"	10'-0"	5'-0"	10'-0"	5'-0"
DOUBLE SLIDE									
3070	2'-5"	6'-11 1/2"	4'-9"	6'-11 1/2"	4'-9"	6'-11 1/2"	4'-9"	6'-11 1/2"	4'-9"
3676	2'-11"	6'-11 1/2"	5'-9"	6'-11 1/2"	5'-9"	6'-11 1/2"	5'-9"	6'-11 1/2"	5'-9"
4080	3'-5"	7'-5 1/2"	6'-9"	7'-5 1/2"	6'-9"	7'-5 1/2"	6'-9"	7'-5 1/2"	6'-9"
50100	4'-11"	9'-11 1/2"	8'-9"	9'-11 1/2"	8'-9"	9'-11 1/2"	8'-9"	9'-11 1/2"	8'-9"

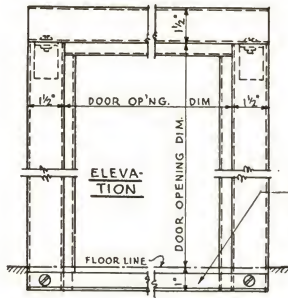
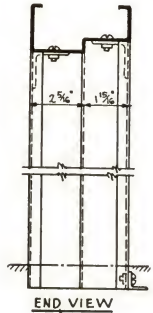
ELEVATION SEC. A-A SEC. B-B
DETAILS OF ALL KICK-PLATE DOOR
ANY TYPE SWING OR SLIDE DOOR MAY HAVE
ALL KICK PLATE PANEL WHEN SO SPECIFIED

NOTE: ALL TYPES SHOWN ARE FURNISHED EITHER SINGLE OR DOUBLE SLIDE AS INDICATED BY DOTTED LINES AT TYPE 2670 SLIDING DOORS ARE SHIPPED

WITH CLEAVES, HASPS, DOOR PULLS, TRACK BRACKETS, TROLLEYS, GUIDES, BINDERS & STOPS SHIPPED SEPARATELY. HARDWARE SHOWN ON PLATE Y-507

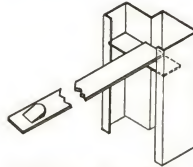
HORIZONTAL SECTION THRU
SINGLE SLIDING DOORHORIZONTAL SECTION THRU
DOUBLE SLIDING DOOR

VERTICAL SECTION



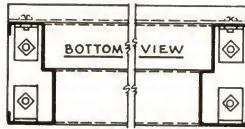
STOCK FRAME SIZES			
DOOR OPENING DIMENSION			
SINGLE		DOUBLE	
WIDTH	HEIGHT	WIDTH	HEIGHT
2'-6"	7'-0"	5'-0"	7'-0"
2'-8"	7'-0"	6'-0"	7'-0"
3'-6"	7'-0"	7'-0"	7'-0"
4'-0"	8'-0"	8'-0"	8'-0"
5'-0"	10'-0"	10'-0"	10'-0"

SPREADER ANGLE TO FACILITATE ACCURATE SETTING OF FRAME, MAY BE LEFT IN PLACE OR REMOVED BEFORE FLOOR IS LAID. FOR ERECTION OF FRAME SEE NOTES ON PLATE Y-502.



ANCHOR CLIP USED IN MASONRY OPENINGS

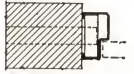
NOTE
FRAMES ARE FURNISHED FOR SWING DOORS ONLY ~



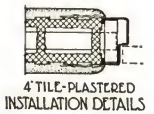
4" PARTITION



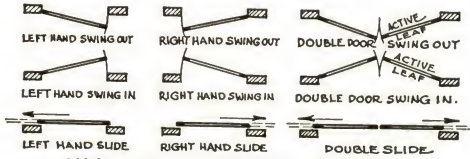
GYPSUM-PLASTERED



6" BRICK WALL



4" TILE-PLASTERED INSTALLATION DETAILS

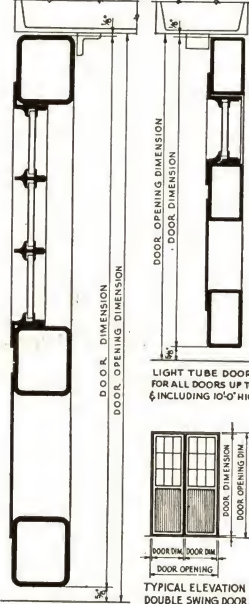


KEY TO HANDING OF DOORS
OUTSIDE OF DOORS IS TOWARD BOTTOM OF PAGE.

DOOR FRAMES ARE CONSTRUCTED OF #14 GAUGE SHEET STEEL.
FRAMES SHALL BE ANCHORED TO STRUCTURAL STEEL OR SHALL BE EQUIPPED WITH MASONRY ANCHOR CLIPS SHOWN ABOVE, SPACED APPROXIMATELY 24" APART AT JAMBS ONLY.
FRAMES FOR SLIDING DOORS NOT FURNISHED BY D.S.P.G.

INDUSTRIAL DOORS ~ SERIES-FT ~ FRAMES Y-504

VERTICAL SECTIONS



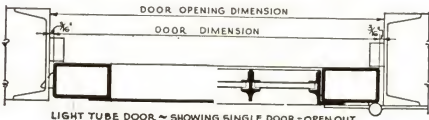
DOOR OPENING HEIGHTS
7'-0"
7'-6"
8'-0"
10'-0"

TYPES AND SIZES

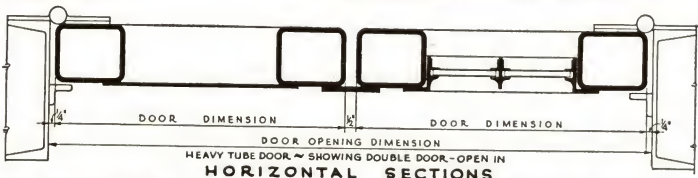
7'-0"	7'-6"	8'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"
SINGLE DOOR OP'NG 2'-6"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	6'-6"	7'-0"	7'-6"
DOUBLE " 5'-0"	6'-0"	7'-0"	8'-0"	10'-0"	12'-0"	14'-0"	16'-0"	18'-0"

ALL TYPES SHOWN ARE FURNISHED IN EITHER SINGLE OR DOUBLE SWING. SEE ELEVATION AT LEFT FOR DOUBLE SWING.
FRAMES FOR SINGLE OR DOUBLE SWING DOORS 10'-0" OR LESS IN HEIGHT WILL BE FURNISHED WHEN SPECIFIED.
THRESHOLDS NOT FURNISHED BY D.S.P.G.

FOR HANDING INFORMATION SEE PLT. Y-504.
GLASS AND GLAZING NOT BY D.S.P.G.
WHEN DESIRED, KICK PLATE MAY BE SUBSTITUTED FOR GLASS PANELS AT NO EXTRA COST.
CYLINDER LOCKS NOT FURNISHED FOR DOORS OVER 10'-0" HIGH.

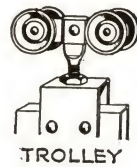


LIGHT TUBE DOOR ~ SHOWING SINGLE DOOR-OPEN OUT



HEAVY TUBE DOOR ~ SHOWING DOUBLE DOOR-OPEN IN
HORIZONTAL SECTIONS

INDUSTRIAL DOORS ~ SERIES-RT ~ SWING Y-550



TROLLEY



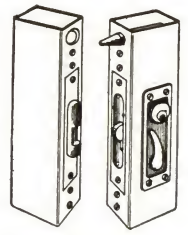
DOOR PULLS



HASP AND STAPLE



CENTER GUIDE



CYLINDER LOCK

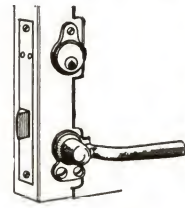
HARDWARE FOR SLIDING DOORS

NOTE: HARDWARE SHOWN IS TYPICAL FOR FENESTRA INDUSTRIAL DOORS. FOR ITEMS USED SPECIFICALLY FOR LIGHT OR FOR HEAVY

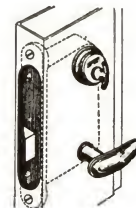
INDUSTRIAL DOORS CONSULT D.S.P.G. REPRESENTATIVE. CYLINDER LOCKS AVAILABLE FOR CERTAIN TYPE DOORS NOT OVER 10'-0" IN HEIGHT.



CHAIN BOLT



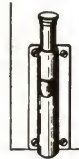
CYLINDER LOCKS



HINGES



CABIN HOOK



FOOT BOLT



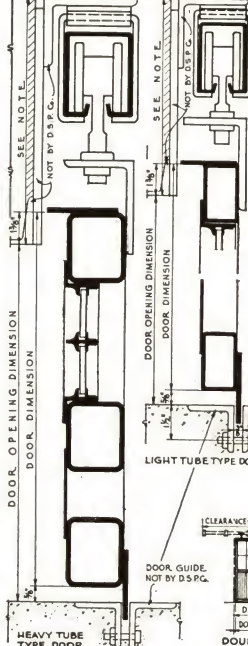
TEE-LATCHES

HARDWARE FOR SWINGING DOORS

INDUSTRIAL DOOR HARDWARE Y-507

Y-507

VERTICAL SECTIONS



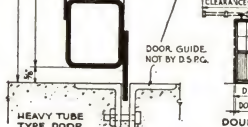
DOOR OPENING HEIGHTS
6'-10 1/2"
7'-4 1/2"
7'-10 1/2"
9'-10 1/2"

TYPES AND SIZES

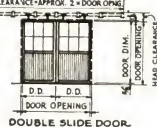
6'-10 1/2"	7'-4 1/2"	7'-10 1/2"	9'-10 1/2"	10'-10 1/2"	11'-10 1/2"	12'-10 1/2"	13'-10 1/2"	14'-10 1/2"
SINGLE DOOR OP'NG 2'-3"	2'-9"	3'-3"	3'-9"	4'-9"	5'-9"	6'-9"	7'-9"	8'-9"
DOUBLE " 4'-9"	5'-9"	6'-9"	7'-9"	8'-9"	9'-9"	10'-9"	11'-9"	12'-9"

ALL TYPES SHOWN ARE FURNISHED IN EITHER SINGLE OR DOUBLE SLIDE. FRAMES NOT FURNISHED FOR SLIDE DOORS. FOR HANDING INFORMATION SEE PLT. Y-504.
REQ'D CLEARANCE AT HEAD VARIES WITH WEIGHT OF DOOR. LAP OF DOORS AT JAMBS VARIES FOR LIGHT AND HEAVY TUBE AND

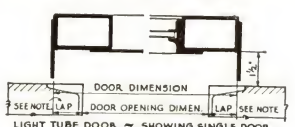
FOR SINGLE AND DOUBLE DOORS, SEE D.S.P.G. STANDARDS OR REPRESENTATIVE. CYLINDER LOCKS ARE NOT FURNISHED FOR DOORS OVER 10'-0" HIGH. WHEN DESIRED, KICK PLATE MAY BE SUBSTITUTED FOR GLASS PANELS AT NO EXTRA COST. GLASS AND GLAZING NOT BY D.S.P.G.



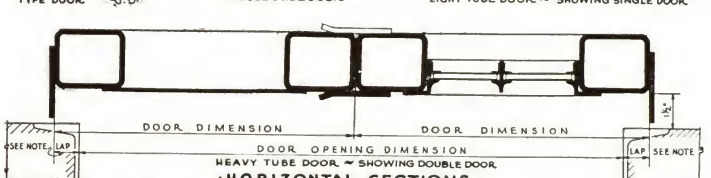
LIGHT TUBE TYPE DOOR



DOUBLE SLIDE DOOR



LIGHT TUBE DOOR ~ SHOWING SINGLE DOOR-OPEN OUT



HEAVY TUBE DOOR ~ SHOWING DOUBLE DOOR-OPEN IN
HORIZONTAL SECTIONS

INDUSTRIAL DOORS ~ SERIES-RT ~ SLIDE Y-551

COUNTERWEIGHTED DOORS

Fenestra Counterweighted Doors, in their various types, comprise a wide range of doors for use in such industrial buildings as factories, powerhouses, warehouses, transportation terminals, etc.

All types of Counterweighted Doors rise from a closed vertical position to an open position at or near the head of the door opening. In some types, the door leaves retain their vertical position as they rise; in others, they tilt as they rise; in still others, the leaves fold as they rise. The opening and closing movements are made easy and uniform by counterbalancing.

These doors are of rugged construction for general industrial use. They occupy no floor space when open; they require no floor tracks. Some provide a protecting canopy over the door opening. They do not blind or restrict windows in the sidewalls. Their operation, even in snow and ice, is positive and assured, due to their substantial, trouble-free, operating equipment.

Unusual care is required, both in the design and in the erection of Counterweighted Doors. Full clearances, both for the doors themselves and for counterweights, jamb guides, sheaves and cables, must be allowed as required. The General Contractor must provide and set anchor bolts and anchor bolt supports for door mechanism, accurately as shown. Steel framing, supports and electrical connections must be supplied by the respective trades involved, in accordance with the door manufacturer's requirements.

Fenestra Engineers will gladly assist with details and recommendations for filling any door opening. The proper choice often depends

so largely on the type of service required and the character and construction of the building that we strongly recommend you consult a Fenestra Engineer before making your selection.

The information on the following pages is designed merely to cover some of the major characteristics of each type of door and the important features of its installation.

(All Fenestra Counterweighted Doors are erected by the Fenestra Construction Co. Door frames are not supplied by D.S.P. Co.)



Above: Electrically operated Fenestra Pier Door, Partly Open. When fully open, the two leaves are nested and tilted back to a horizontal position above the opening.



Above: Canopy "B.A." Doors in the Dewey Ave. Municipal Machine Shop, Rochester, N. Y. The various positions of the doors demonstrate their action in opening and closing.

Right: Six Fenestra Double Vertically Sliding Doors, side by side in Bus Garage of the New York State Railways at Syracuse, N. Y. Note the various positions of the doors from "fully open" on the left to "fully closed" on the right.



"DOUBLE VERTICAL LIFT" DOORS



Fenestra Vertical Lift Door.

This door is particularly adapted to use in foundries, machine shops, railroad shops and industrial plants. It is ideal in locations where a high door is required for the passage of large castings, machinery and bulky loads of all kinds.

The construction is simplicity itself. Two door leaves, each approximately one-half the height of the door opening, are erected in parallel, vertical guideways and are counterweighted in such a manner that, in opening, the lower and inner leaf rises at twice the speed of the upper and outer leaf. Thus, the two leaves clear the

("Light" types have 14 ga., 5 x 1 3/4 in. stiles and rails for doors up to 14 ft. in either dimension. "Heavy" types have 3 in. channel stiles and rails for doors over 14 ft. in either dimension up to 20 x 20 ft.)

It is impossible to place too much emphasis on the advantages of the Fenestra Double Vertical Lift Door. Its vertical sliding principle is simple. It requires a minimum of effort for operation. Its first cost is low. It can be recommended with confidence for almost any type of opening where head clearance above the lintel is adequate.

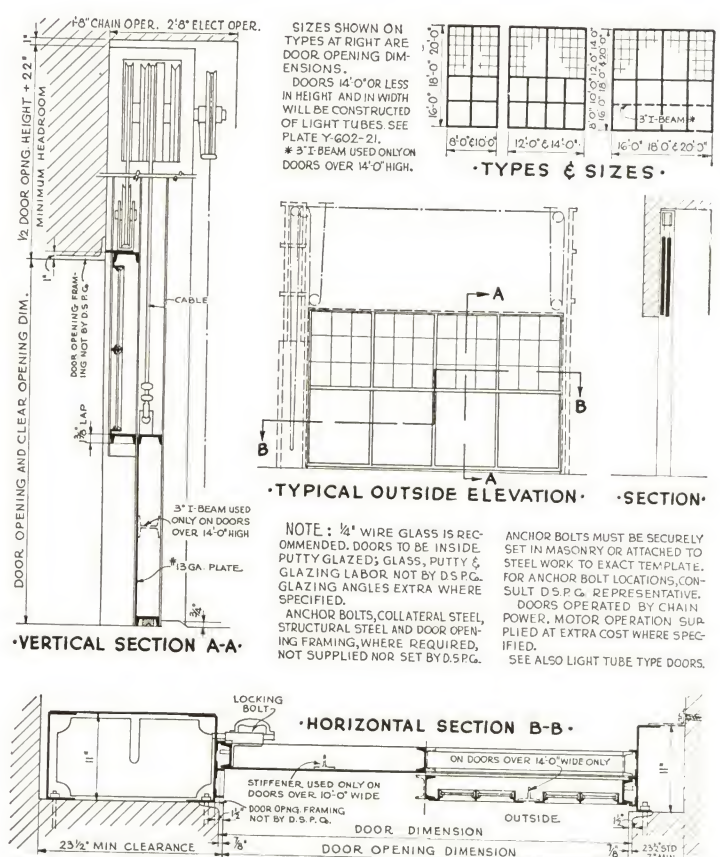
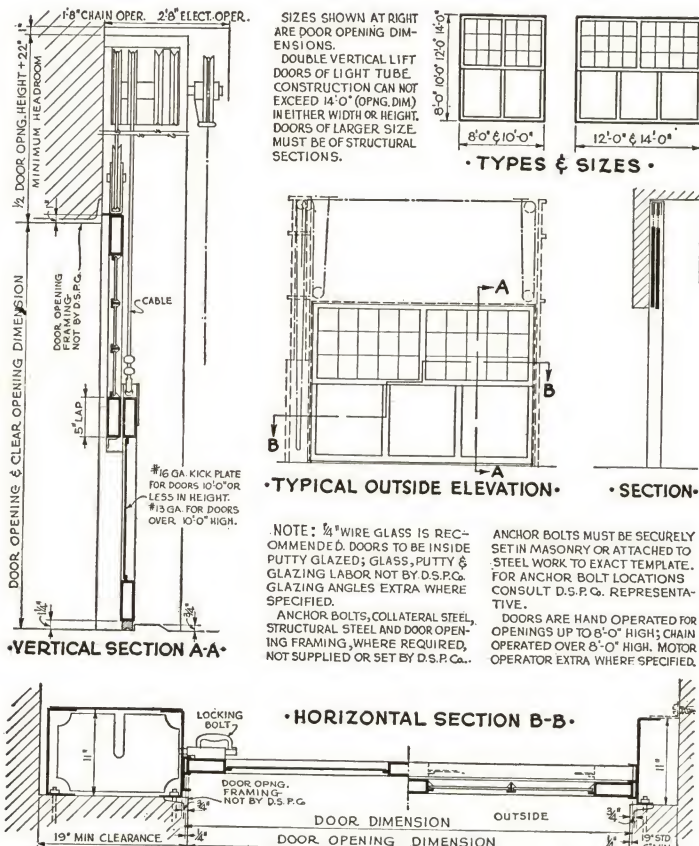
head of the opening at the same time and in fully open position, remain vertically side by side, about the lintel and inside the building.

This form of operation insures speedy, smooth, trouble free movement both in opening and closing but it also requires clearance above the lintel equal to one-half the height of the door opening plus 22 inches.

The door leaves have stiles and rails mitered, welded and ground smooth. The upper portion of "Light" door leaves have muntins membered directly into the stiles and rails but the upper portions or "Heavy" type leaves have inserts of 1 3/8 in. fixed light windows. Both types of construction accommodate inside glazing with 1/4 in. glass, spring clips and putty. (Glazing angles are supplied at extra cost where specified.) The lower portion of all door leaves is covered by 13-gauge steel plate.

The door leaves are supported in the opening by flexible steel cables which are carried up over cast sheaves mounted on pressure lubricated roller bearings in pressed steel shrouds and which terminate in counterweights at the jambs. Hand operation is standard (hand chain power at extra cost) in openings up to 8 ft.-0 in. high. Hand chain power is standard (electric power at extra cost) in openings over 8 ft.-0 in. high

Weathering is accomplished at the head by a rubber baffle; at the jambs by weathering strips and at the sill by a weathering channel and a rubber bumper. A locking bolt is provided at the power jamb but cylinder locks are not supplied.



"PIER" DOORS

("Light" type, 14 ga., 5 x 1 3/4 in. stiles and rails for doors up to 14 x 12 ft. openings. "Heavy" type, 4 in. channel stiles and rails for doors over 14 x 12 ft. and up to 20 x 20 ft.)

This door is especially desirable in piers, terminals, warehouses and all types of industrial and storage buildings and railway shops as it operates quickly and easily, permits the maximum use of floor space and requires a minimum clearance above the opening. Does not project.

Two door leaves, each approximately half the height of the opening (plus head and meeting rail weatherlaps) are suspended one above the other in vertical guideways and are so motivated that the lower leaf slides vertically upward in guides attached to the upper leaf until it has traveled about half the height of the door opening. The nested leaves then swing inward at the top while the bottom continues to move upward until both leaves, at full open position, are horizontal, clear of the lintel and extending back into the building.

"Light" doors 12 ft. high or less have upper portions with muntins membered into stiles and rails to accommodate outside glazing with 1/4 in. glass, putty and glazing clips. Lower portions are covered with steel plate. "Heavy" types have 1 3/8 in. fixed steel sash in the upper portions and 13-gauge steel plates below.

Top and bottom rollers on roller bearings travel in steel guideways and direct the door movement.

Suspension is by means of flexible wire cables carried up over cast sheaves on pressure lubricated roller bearings mounted in pressed steel shrouds and thence to counterweights at the jambs. Hand operation is standard with hand chain power extra in openings less than 8 ft.-0 in. high. Hand chain power is standard with electric power extra for openings over 8 ft.-0 in. high. An inside locking bolt at the counterweight jamb is included.



Fenestra Pier Door.

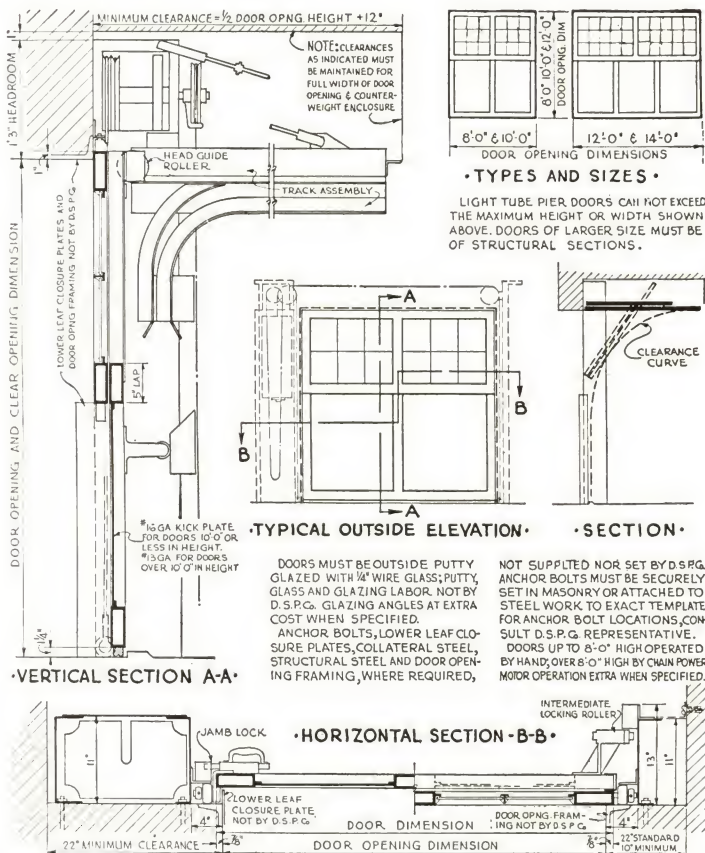
(Anchor bolts, door frames and collateral steel for attaching door guides and operating hardware are not supplied nor set by Detroit Steel Products Company.)

For the railway entrances to industrial plants or similar door openings in railway shops, freight terminals or round houses, the Fenestra Railway Door has many advantages.

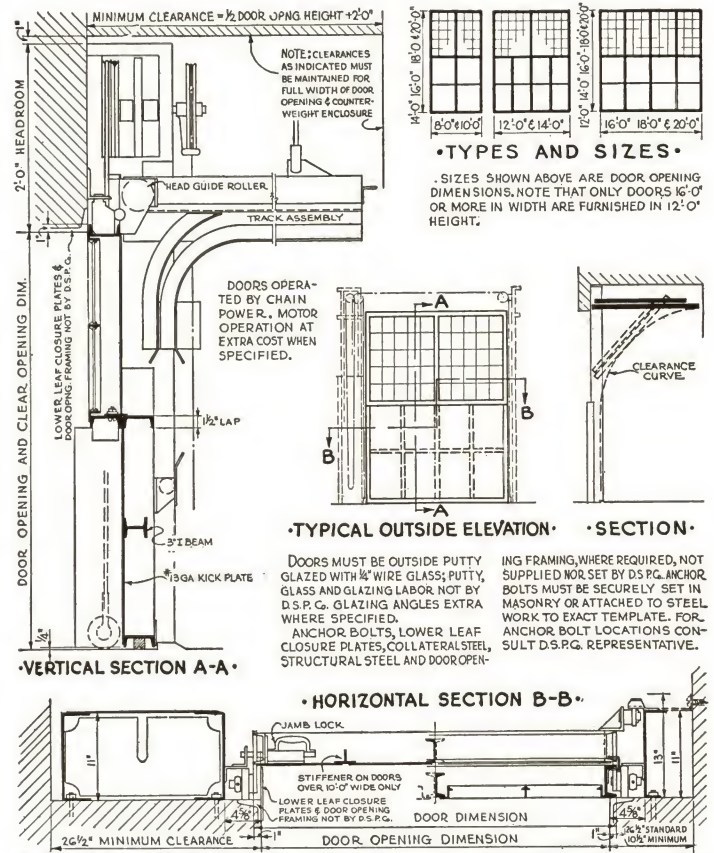
It is standardized for one size of door opening only,—17 ft. wide by 22 ft. high. This we understand is about the minimum opening specified by railway code requirements to give ample clearance for locomotives and cars. The door may be of the Double Vertical Lift type, made from 3 in. channel, or it may be of the "Pier" Type, made from 4 in. channel.

In piers or other similar structures Fenestra Pier Doors of special design may be used with counterweights concealed between the jamb channels and the columns. This improves the inside appearance of the door and conserves the space commonly occupied by superimposed counterweights and counterweight guards.

For further information and details of doors for railway entrances and pier sheds, consult DETROIT STEEL PRODUCTS COMPANY representative.



Y-601-21



Y-601-22

"CANOPY" DOORS

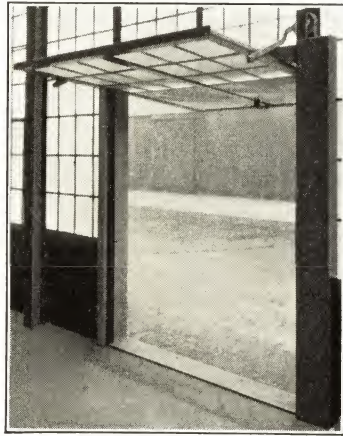
("Light" types not supplied. "Heavy" types have 3 in. channel stiles and rails for doors up to 14 x 10 ft.; 4 in. channel stiles and rails for doors over 10 ft. high up to a maximum of 14 x 14 ft.)

This door is designed primarily for comparatively small openings, such as are normally found in warehouses, storage buildings and the service entrances of industrial plants and commercial structures.

It is simple and substantial in design, operates quickly and, at relatively low cost, provides the essential advantages of overhead door construction; namely, free and unobstructed floor space and a protecting canopy above the doorway when open. Since its mechanism is not complicated, minimum maintenance is required.

A single leaf door with corners of stiles and rails mitered, welded and ground. Upper portion carries 1 3/8 in. fixed sash accommodating outside glazing with 1/4 in. glass, putty and spring clips. Lower portion covered with 13-gauge steel plate.

Hand operation is standard for openings up to 8 ft. 0 in. high. (Hand chain power at extra cost where specified for these small openings but



Fenestra Canopy Door.

standard for openings larger than 8 ft. 0 in. high.) A locking device which locks the door at both jambs, is included. (Cylinder locks at extra cost.) Electric operation cannot be supplied.

CANOPY "B.A." DOORS

(Manufactured under J. I. Byrne patents)

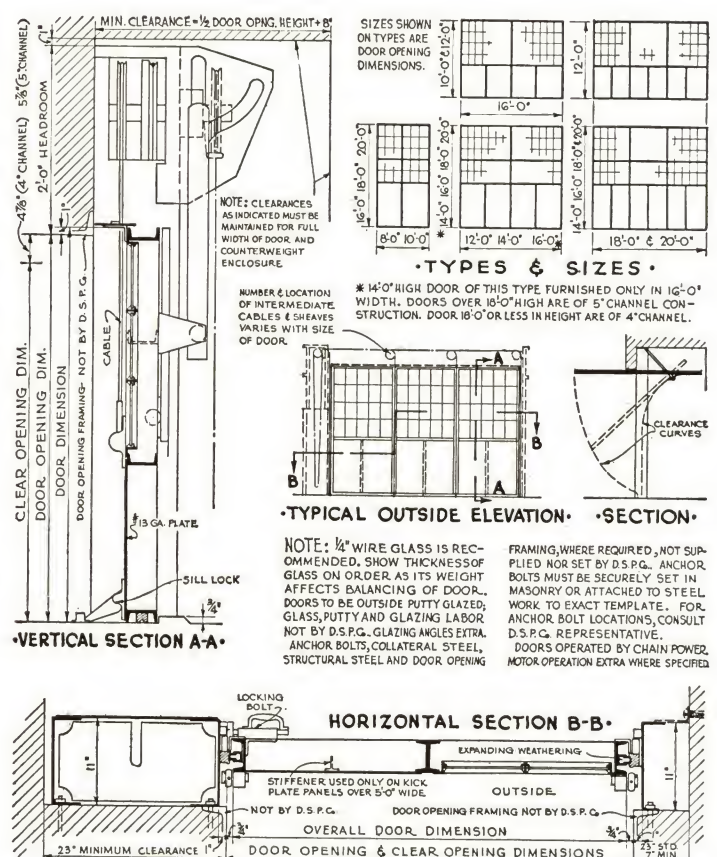
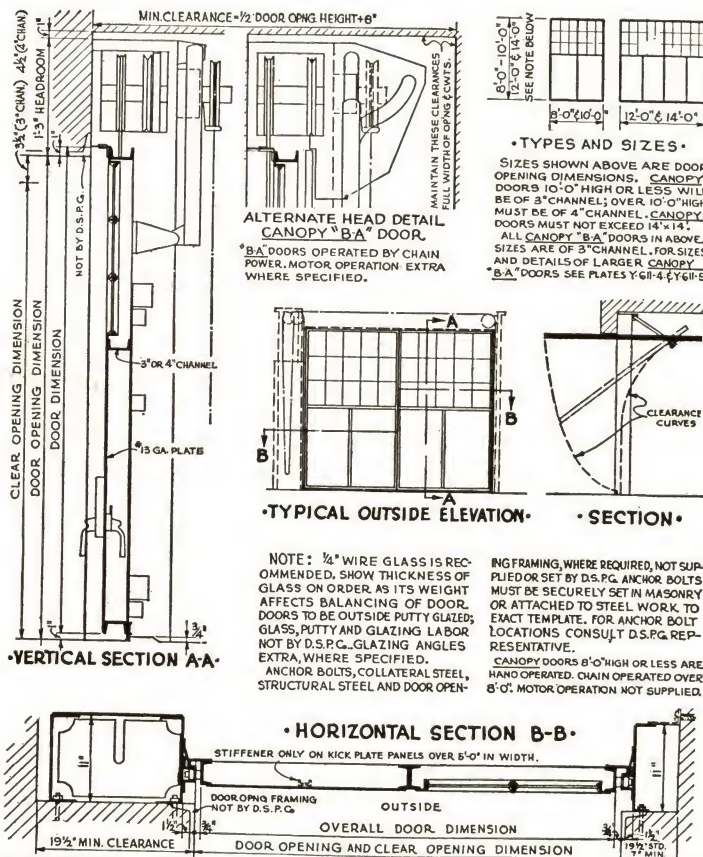
("Light" types not supplied. "Heavy" types have 3 in. channel stiles and rails for doors up to 14 ft. wide x 14 ft. high. 4 in. channel stiles and rails for doors when above 14 ft. in either dimension but under 18 ft. high; not over 20 ft. wide. 5 in. channel stiles and rails for doors when over 18 ft. high and not over 20 ft. wide. 6 in. channel stiles and rails for doors over 20 ft. 0 in. wide.)

Particularly applicable to service garages, warehouses and terminals due to its automatic locking and unlocking device and its vertical rise of 4 in. clearing snow and ice.

By the use of intermediate cables, the door becomes applicable to larger openings such as are frequently found in fire engine houses, railroad round houses, street car barns and highway bus garages.

Designed as a single leaf, shop fabricated in sections and field assembled. Frame corners mitered, welded and ground smooth. Secondary members, coped and welded. Lower section covered with 13-gauge steel approximately 5 ft. high. Upper section fitted with 1 3/8 in. steel window frames outside glazed with spring glazing clips and putty. Power is hand controlled, chain and chain wheel being standard (electric equipment at extra cost).

Hardware includes lateral locking bolts at the operator jamb and automatic toggle bolts at the sill. These bolts lock automatically as the door closes and unlock as it opens. Cylinder locks not supplied.

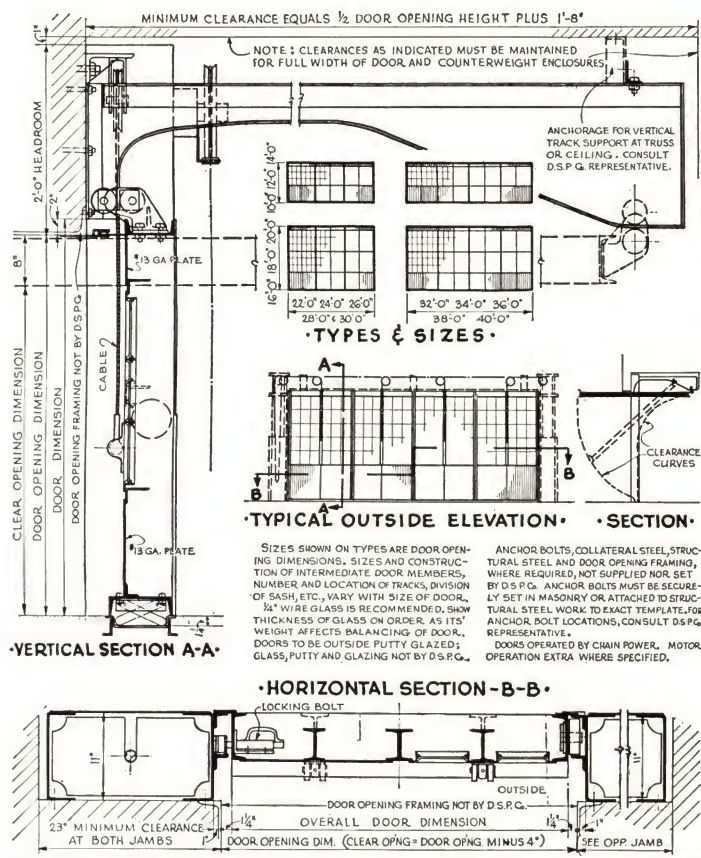


CANOPY DOORS ~ 3" & 4" CHANNEL TYPE

Y-600-6

CANOPY "B.A." DOORS 4" & 5" CHANNEL Y-611-4

ACCORDION DOORS



Fenestra "Accordion" Doors.

("Light" types are of 14 ga., 5 x 1¾ in. pressed tubes, for openings up to 16 ft. wide by 15 ft. high. "Heavy" types are of 3 x 2½ in. rectangular tubing, for openings over 12 x 10 ft. up to openings 22 x 22 ft.)

Built for heavy and constant usage in railway structures, mills,

warehouses, bus terminals, garages, shops, round houses and stations whenever openings require doors of more than ordinary width or height. Doors usually are made four leaves per openings, hinged at jambs and foldings against each other with free or active leaves suspended on trolleys from overhead track.

(Special arrangements of 3, 4, 5 or 6 leaf construction can be furnished. Also special pilot doors not over 3 x 7 ft.)

Construction is similar to Fenestra Industrial Doors. Hardware includes heavy, flat steel hinges with full knuckles and steel hinge pins; overhead channel track, extension track brackets, four-wheel roller bearing trolleys, Japanned steel safety hasp and keeper, hand pulls, chain bolts and foot bolts as required. Cylinder locks at extra cost but only on a free side-hinged leaf in an opening containing 3, 5 or 6 leaves.

Cylinder locks not furnished for doors over 10 ft. 0 in. high. Glass, padlocks, flashing or hoods are not supplied. Doors may be operated manually or may be electrically operated and connected to remote control stations, if so specified.

ROLLING DOORS FOR HANGARS

Rolling Doors for Airplane Hangars are made in the following types: $2\frac{1}{2} \times 2\frac{1}{2}$ in. tube or 3 in. channel for openings from 12 to 18 ft. high. $3 \times 2\frac{1}{2}$ in. tube or 4 in. channel for openings from 18 to 22 ft. high. $4 \times 2\frac{1}{2}$ in. tube or 5 in. channel for openings from 22 to 28 ft. high.

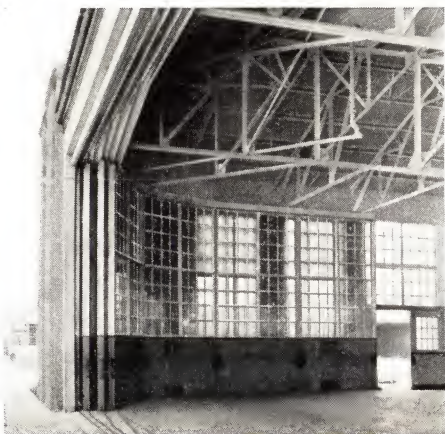
All Rolling Door Leaves are made 10 ft. 1 in. wide to provide 1 in. lap of leaves. Each door leaf is equipped with two vertically adjustable bottom rollers machined to a 16 lb. rail, and at top with two guide rollers.

Rolling Doors may be opened in either of two ways.

(1) They may roll on straight tracks and nest into pockets or "A" frames at the sides of the door opening. This is called the "Straight Slide" Type.

(2) They may roll on curved tracks around the corner of the hangar and rest when fully open, along the side walls of the structure. This is called the "Round-the-Corner" Type.

Illustration at right shows Round-the-Corner Doors in fully opened position.



ADDITIONAL INFORMATION
AVAILABLE

Due to the variety of products covered in this catalog, their descriptions and details are of necessity condensed. Available on request are catalogs with complete information, full size sections and large scale details of construction and installation for each type of Fenestra window or door. Additional literature, supplied on request, covers in detail: Operating Devices; Design and Function of Door Locks; Machining for Hardware in Door Frames not by Detroit Steel Products Co.; Location Diagrams for Attachment Holes and Anchor Bolts for Counterweighted Doors; Technical data on Bonderizing, Lighting and Ventilation.

Fenestra maintains a staff of experienced engineers and designers whose services are at the disposal of Architects. A consultation with a Fenestra representative at an early stage in the design of a project will often effect economies in installations of Windows or Doors or solve problems of Light, Ventilation or Operation.

DETROIT STEEL PRODUCTS COMPANY

America's Oldest and Largest Steel Window Manufacturer

Local Representatives in 200 Principal Cities. See "FENESTRA
STEEL WINDOW CO." in the local Telephone Directory.

FACTORY BRANCH OFFICES

BOSTON	38 Chauncy St.
CHICAGO	840 N. Michigan Ave.
CINCINNATI	1507-11 Central Parkway
CLEVELAND	1808 St. Clair Ave., N. E.
DALLAS	2310 Griffin St.
DETROIT	2250 E. Grand Boulevard
LOS ANGELES	2530 E. 14th St.
NEW YORK	420 Lexington Ave.
NEWARK	1027 Broad St.
OAKLAND	63rd & Doyle Sts.
PHILADELPHIA	1200 S. 35th St.
PITTSBURGH	434 Melwood St.
SAN FRANCISCO	111 Sutter St.
WASHINGTON	4th & Channing Sts., N. E.

Fenestra

STEEL WINDOWS AND DOORS